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AMONG the more salient features of the Metropolis which instantly strike the attention of the stranger are the stations of the Fire Brigade. Whenever he happens to pass them, he finds the sentinel on duty, he sees the 'red artillery' of the force; and the polished axle, the gleaming branch, and the shining chain, testify to the beautiful condition of the instrument, ready for active service at a moment's notice. Enconced in the shadow of the station, the liveried watchmen look like hunters waiting for their prey—nor does the hunter move quicker to his quarry at the rustle of a leaf, than the firemen dash for the first ruddy glow in the sky. No sooner comes the alarm than one sees with a shudder the rush of one of these engines through the crowded streets—the tearing horses covered with foam—the heavy vehicle swerving from side to side, and the black helmeted attendants, swaying to and fro. The wonder is that horses or men ever get safely to their destination: the wonder is still greater that no one is ridden over in their furious drive.

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Arrived at the place of action, the hunter's spirit which animates the fireman and makes him attack an element as determinedly as he would a wild beast, becomes evident to the spectator. The scene which a London fire presents can never be forgotten: the shouts of the crowd as it opens to let the engines dart through it, the foaming head of water springing out of the ground, and spreading over the road until it becomes a broad mirror reflecting the glowing blaze—the black, snake-like coils of the leather hose rising and falling like things of life, whilst a hundred arms work at the pump, their central heart—the applause that rings out clear above the roaring flame as the adventurous band throw the first hissing jet—cheer following cheer, as stream after stream shoots against the burning mass, now flying into the socket-holes of fire set in the black face of the house-front, now dashing with a loud shir-r against the window-frame and wall, and falling off in broken showers. Suddenly there is a loud shrill cry, and the bank of human faces is upturned to where a shrieking wretch hangs frantically to an upper window-sill. A deafening shout goes forth, as the huge fire-escape comes full swing upon the scene: a moment's pause, and all is still, save the beat, beat, of the great water pulses, whilst every eye is strained towards the fluttering garments flapping against the wall. Will the ladder reach, and not dislodge those weary hands clutching so convulsively to the hot stone? Will the nimble figure gain the topmost rung ere nature fails? The blood in a thousand hearts runs cold, and then again break forth a thousand cheers to celebrate a daring rescue. Such scenes as this are of almost nightly occurrence in the Great Metropolis. A still more imposing yet dreadful sight is often exhibited in the conflagrations of those vast piles of buildings in the City filled with inflammable merchandise. Here the most powerful engines seem reduced to mere squirts; and the efforts of the adventurous Brigade men are confined to keeping the mischief within its own bounds.

When we recollect that London presents an area of 36 square miles, covered with 21,600 square acres of bricks and mortar, and numbers more than 380,000 houses; that all the riches it contains are nightly threatened in every direction by an ever-present enemy; that the secret match, the spontaneous fire, and the hand of the drunkard, are busily at work; it is evident that nothing but a force the most disciplined, and implements the most effective, can be competent to cope with so sudden and persevering a foe.

As late as twenty-two years ago there was no proper fire police to protect the Metropolis against what is commonly called the 'all-devouring element.' There was, it is true, a force of 300 parochial

parochial engines set on foot by Acts which were passed between the years 1768-74—Acts which are still in existence—but these engines are under the superintendence of the beadle and parish engineers, who are not the most active of men or nimble of risers. It may easily be imagined, therefore, that the machines arrived a little too late; and, when brought into service, were often found to be out of working order. Hence their employment did not supersede the private engines kept by some of the insurance offices long prior to their existence. On the contrary, owing to the increase of business which took place about this time, the different companies thought it worth their while to strengthen their former establishments, and this process continued while the parochial engines, with a few honourable exceptions, were dropping into disuse.

About the year 1833 it became evident that much was lost, both to the public and to the insurance companies, by every engine acting on its own responsibility—a folly which is the cause of such jealousy among the firemen at Boston (United States), that rival engines have been known to stop on their way to a fire to exchange shots from revolvers. It was therefore determined to incorporate the divided force, and place it under the management of one superintendent, each office contributing towards its support, according to the amount of its business. All the old established companies, with one exception,* shortly came into the arrangement, and Mr. Braidwood, the master of the fire-engines of Edinburgh, being invited to take the command, organised the now celebrated *London Fire Brigade*.

At the present moment, then, the protection against fire in London consists, firstly, in the 300 and odd parish-engines (two to each parish), which are paid for out of the rates. The majority of these are very inefficient, not having any persons appointed to work them who possess a competent knowledge of the service. Even women used now and then to fill the arduous post of director; and it is not long since a certain Mrs. Smith, a widow, might be seen at conflagrations, hurrying about in her pattens, directing the firemen of her engine, which belonged to the united parishes of St. Michael Royal and St. Martin Vintry, in the City. We question, indeed, if at the present moment any of the parish-engines are much better officered than in the days of widow Smith, with the exception of those of Hackney, Whitechapel, Islington, and perhaps two or three others. Secondly, there are an unknown number of private engines kept in public

* The West of England Fire-Office, which retains the command of its own engines.

buildings and large manufactories, which sometimes do good service when they arrive early at small fires in their neighbourhood, although, singularly enough, when called upon to extinguish a conflagration in their own establishments, they generally 'lose their heads,' as the Brigade men express it; and very many instances have occurred where even the parish-engines have arrived and set to work before the one on the premises could be brought to bear upon the fire. The cause is clear. The requisite coolness and method which every one can exercise so philosophically in other people's misfortunes utterly fail them when in trouble themselves. The doctor is wiser in his generation, and is never so foolish as to prescribe for himself or to attend his own family.

Thirdly, we have, in contrast to the immense rabble of Bumble engines and the Bashi-Bazouks of private establishments, the small complement of men and material of the Fire Brigade. It consists of twenty-seven large horse-engines, capable of throwing 88 gallons a minute to a height of from 50 to 70 feet, and nine smaller ones drawn by hand. To work them there are twelve engineers, seven sub-engineers, thirty-two senior firemen, thirty-nine junior firemen, and fourteen drivers, or 104 men and 31 horses. In addition to these persons, who form the main establishment, and live at the different stations, there is an extra staff of four firemen, four drivers, and eight horses. The members of this supplementary force are also lodged at the stations,* as well as clothed, but are only paid when their services are required, and pursue in the daytime their ordinary occupations.

* The following are the stations:—

	No. of Engines.
Watling-street (the principal station)	4
Wellclose-square	3
Farringdon-street	4
Chandos-street, Covent-garden	3
Schoolhouse-lane, Ratcliffe	1
Horseferry-road, Westminster	1
Waterloo-road	1
Paradise-row, Rotherhithe	1
Jeffrey-square, St. Mary-Axe	2
Whitecross-street	1
High Holborn, No. 254	2
Crown-street, Soho	2
Wells-street, Oxford-street	1
Baker-street, Portman-square	1
King-street, Golden-square	3
Southwark-bridge-road	3
Morgan's-lane, Tooley-street	1
Floating engine, off King's-stairs, Rotherhithe	1
„ off Southwark-bridge	1

This not very formidable army of 104 men and 31 horses, with its reserve of eight men and eight horses, is distributed throughout the Metropolis, which is divided into four districts as follows:—On the north side of the river—1st, From the eastward to Paul's Chain, St. Paul's Churchyard, Aldersgate-street, and Goswell-street-road; 2nd, From St. Paul's, &c., to Tottenham-court-road, Crown-street, and St. Martin's-lane; 3rd, From Tottenham-court-road, &c., westward. 4th, The entire south side of the river. At the head of each district is a foreman, who never leaves it unless acting under the superior orders of Mr. Braidwood, the superintendent or general-in-chief, whose head-quarters are in Watling-street.

In comparison with the great Continental cities such a force seems truly insignificant. Paris, which does not cover a fifth part of the ground of London, and is not much more than a third as populous, boasts 800 *sapeurs-pompier*s; we make up, however, for want of numbers by activity. Again, our look-out is admirable: the 6000 police of the metropolis, patrolling every alley and lane throughout its length and breadth, watch for a fire as terriers watch at rat-holes, and every man is stimulated by the knowledge, that if he is the first to give notice of it at any of the stations it is half a sovereign in his pocket. In addition to the police, there are the thousand eager eyes of the night cabmen and the houseless poor. It is not at all uncommon for a cabman to earn four or five shillings of a night by driving fast to the different stations and giving the alarm, receiving a shilling from each for the 'call.'

In most Continental cities a watchman takes his stand during the night on the topmost point of some high building, and gives notice by either blowing a horn, firing a gun, or ringing a bell. In Germany the quarter is indicated by holding out towards it a flag by day, and a lantern at night. It immediately suggests itself that a sentinel placed in the upper gallery of St. Paul's would have under his eye the whole Metropolis, and could make known instantly, by means of an electric wire, the position of a fire, to the head station at Watling-street, in the same manner as the Americans do in Boston. This plan is, however, open to the objection, that London is intersected by a sinuous river, which renders it difficult to tell on which bank the conflagration is raging. Nevertheless we imagine that the northern part of the town could be advantageously superintended from such a height, whilst the southern half might rest under the surveillance of one of the tall shot-towers on that bank of the Thames. The bridges themselves have long been posts of observation, from which a large portion of the river-side property

perty is watched. Not long ago there was a pieman on London-bridge, who eked out a precarious existence by keeping a good look-out up and down the stream.

Watling-street was chosen as the head-quarters of the Fire Brigade for a double reason: it is very nearly the centre of the City, being close to the far-famed London Stone, and it is in the very midst of what may be termed, speaking igneously, the most dangerous part of the metropolis—the Manchester warehouses. As the Fire Brigade is only a portion of a vast commercial operation—Fire Insurance—its actions are regulated by strictly commercial considerations. Where the largest amount of *insured* property lies, there its chief force is planted. It will, it is true, go any reasonable distance to put out a fire: but of course it pays most attention to property which its proprietors have guaranteed. The central station receives the greatest number of ‘calls;’ but as a commander-in-chief does not turn out for a skirmish of outposts, so Mr. Braidwood keeps himself ready for affairs of a more serious nature. When the summons is at night—there are sometimes as many as half-a-dozen—the fireman on duty below apprises the superintendent by means of a gutta percha speaking-tube, which comes up to his bedside. By the light of the ever-burning gas, he rapidly consults the ‘London Directory,’ and if the call should be to what is called ‘a greengrocer’s street,’ or any of the small thoroughfares in bye-parts of the town, he leaves the matter to the foreman in whose district it is, and goes to sleep again. If, however, the fire should be in the City, or in any of the great West-End thoroughfares, he hurries off on the first engine. Five minutes is considered a fair time for an engine ‘to horse and away,’ but it is often done in three. Celerity in bringing up aid is the great essential, as the first half hour generally determines the extent to which a conflagration will proceed. Hence the rewards of thirty shillings for the first, twenty for the second, and ten shillings for the third engine that arrives, which premiums are paid by the parish. All the engines travel with as few hands as possible: the larger ones having an engineer, four firemen and a driver, and the following furniture:—

‘Several lengths of scaling-ladder, each $6\frac{1}{2}$ feet long, all of which may be readily connected, forming in a short space of time a ladder of any required height; a canvas sheet, with 10 or 12 handles of rope round the edge of it for the purpose of a fire-escape; one 10-fathom and one 14-fathom piece of $2\frac{1}{4}$ -inch rope; six lengths of hose, each 40 feet long; 2 branch-pipes, one $2\frac{1}{2}$ feet, and the other from 4 to 6 feet long, with one spare nose-pipe; two 6-feet lengths of suction-pipe, a flat rose, stand-cock, goose-neck, dam-board, boat-hook, saw, shovel,

shovel, mattock, pole-axe, screw-wrench, crow-bar, portable cistern, two dog-tails, two balls of strips of sheepskin, two balls of small cord, instruments for opening the fire-plugs, and keys for turning the stop-cocks of the water-mains.'

The weight of the whole, with the men, is not less than from 27 to 30 cwt., a load which in the excitement of the ride is carried by a couple of horses at the gallop.

The hands to work the pumps are always forthcoming on the spot at any hour of the night, not alone for goodwill, as every man—and there have been as many as five hundred employed at a time—receives one shilling for the first hour and sixpence for every succeeding one, together with refreshments. In France the law empowers the firemen to seize upon the bystanders, and compel them to give their services, without fee or reward. An Englishman at Bordeaux, whilst looking on, some few years since, was forced, in spite of his remonstrances, to roll wine-casks for seven hours out of the vicinity of a conflagration. We need not say which plan answers best. A Frenchman runs away, as soon as the *sapeurs-pompier*s make their appearance upon the scene, to avoid being impressed. Still such is the excitement that there are some gentlemen with us who pursue the occupation of firemen as amateurs; providing themselves with the regulation-dress of dark-green turned up with red, and with the accoutrements of the Brigade, and working, under the orders of Mr. Braidwood, as energetically as if they were earning their daily bread.

The fascination of fires even extends to the brute creation. Who has not heard of the dog 'Chance,' who first formed his acquaintance with the Brigade by following a fireman from a conflagration in Shoreditch to the central station at Watling-street? Here, after he had been petted for some little time by the men, his master came for him, and took him home; but he escaped on the first opportunity, and returned to the station. After he had been carried back for the third time, his master—like a mother whose son *will* go to sea—allowed him to have his own way, and for years he invariably accompanied the engine, now upon the machine, now under the horses' legs, and always, when going up-hill, running in advance, and announcing the welcome advent of the extinguisher by his bark. At the fire he used to amuse himself with pulling burning logs of wood out of the flames with his mouth. Although he had his legs broken half a dozen times, he remained faithful to his pursuit; till at last, having received a severer hurt than usual, he was being nursed by the firemen beside the hearth, when a 'call' came, and at the well-known sound of the engine turning out, the poor
brute

brute made a last effort to climb upon it, and fell back dead in the attempt. He was stuffed and preserved at the station and was doomed, even in death, to prove the fireman's friend: for one of the engineers having committed suicide, the Brigade determined to raffle him for the benefit of the widow, *and such was his renown that he realized 123l. 10s. 9d.*

The most interesting and practical part of our subject is the inquiry into the various causes of fires. Mr. Braidwood comes here to our aid with his invaluable yearly Reports—the only materials we have, in fact, on which fire-insurance can be built up into a science, a feat which we have not accomplished to nearly the same extent as with life-insurance, although the Hand in Hand Office was founded so far back as 1696. Thus we have the experience of upwards of one hundred and fifty years, if we could only get at it, to enable the actuary to ascertain the doctrine of chances in this momentous subject, which at present is little better than a speculation. An analysis of the reports, from the organization of the Fire Brigade in 1833 to the close of 1853, a period extending over twenty-one years, affords the following result:—

Abstract of List of Fires and Alarms for Twenty Years ending 1853.

Year.	Totally Destroyed.	Considerably Damaged.	Slightly Damaged.	Total of Fires.	Alarms.			Total of Fires and Alarms.
					False.	Chimney.	Total.	
1833	31	135	292	458	59	75	134	592
1834	28	116	338	482	57	112	169	651
1835	31	125	315	471	66	106	172	643
1836	33	134	397	564	66	126	192	756
1837	22	122	357	501	82	134	216	717
1838	33	152	383	568	79	108	187	755
1839	17	165	402	584	70	101	171	755
1840	26	204	451	681	84	98	182	863
1841	24	234	438	696	67	92	159	855
1842	24	224	521	769	61	82	143	912
1843	29	231	489	749	79	83	162	911
1844	23	237	502	762	70	94	164	926
1845	23	253	431	707	82	87	168	875
1846	25	233	576	834	119	69	188	1,022
1847	27	273	536	836	88	66	154	990
1848	27	269	509	805	120	86	206	1,011
1849	28	228	532	838	76	89	165	1,003
1850	18	229	621	868	91	79	170	1,038
1851	21	255	652	928	115	116	231	1,159
1852	25	238	660	923	93	89	182	1,105
1853	20	241	639	900	72	90	162	1,062
Total	535	4,298	10,091	14,924	1,695	1,982	3,677	18,601

If we examine this table, we find ample evidence that the organization of the Fire Brigade has resulted in an abatement of
loss

loss and danger. Taking the average of the last twenty-one years, there has been a decrease of 5·7 in the last year under the head of ‘totally destroyed.’ This is the best test of the activity of the Brigade, and really means much more than is obvious at first sight. Within these twenty-one years many tens of thousands of houses have been added to the metropolis; our periphery has been continually enlarging; like a tree, we grow year by year by adding a fresh ring of bricks and mortar. Whilst this increase is going on externally, the central part is growing too. We can afford no dead wood in our very heart: if it cannot expand one way, it must another. Accordingly we find the crowded city extending towards the sky; and if we take into account the immense mass of material added to that which existed, all of which is equally liable to the inroads of fire, we can understand why the total number of conflagrations has increased, from 458 in 1833 to 900 in 1853. With such an augmentation of conflagrations, the *decrease* of houses totally destroyed in 1853 is the highest testimony to the ability and zeal of Mr. Braidwood.

The item ‘totally destroyed’ is mainly made up of houses and factories in which are stored very combustible materials, such as carpenters’ and cabinetmakers’ shops, oilmen’s warehouses, sawmills, &c., where the fire gains such a hold in a few minutes as to preclude the possibility of putting it out. The number is also swelled by houses which are situated many miles from the nearest station; for there are no stations in the outskirts of the town, and very few in the crowded suburbs. We have seen complaints of this want of help in thickly-populated localities; but the companies only plant an establishment where the insurances are sufficient to cover the expense, and people who do not contribute have no more right to expect private individuals to take care of their property than tradesmen in the Strand would have to expect the private watchman outside Messrs. Coutts’s bank to look after their shutters. Indeed, it seems to us that the Brigade act very liberally. The firemen never stop to ask whether the house is insured or not; nor are they deterred by distance; and in many cases they have gone as far as Brentford, Putney, Croydon, Barnet, Uxbridge, Cranford-bridge, Windsor Castle, and once to Dover by an express engine. The only difference made by the Brigade between insured and uninsured property is, that after putting out a fire they take charge of the salvage of the former, and leave that of the latter to its owner. The force is, however, very careful to repair immediately any damage they may have done to adjoining property—damage which they commit in the most deliberate manner, re-

gardless of pains and penalties. For instance, *housebreaking* is almost a nightly crime with the firemen whilst in search of water, who never let a wall or a door stand between them and a supply of this element. It is a proof of the good feeling which prevails on such occasions that although they are technically guilty of an offence which renders them liable to punishment, no one murmurs, much less threatens proceedings. If the authorities in the Great Fire of London had acted in a similar manner for the public good, they would have saved the half of the Inner-Temple, which was destroyed, because, according to Clarendon's account, all the lawyers were absent on circuit, and the constables did not dare to take the responsibility of breaking open their chamber doors!

It is a question, whether Government ought not to relieve the parish authorities from a duty which they cannot separately perform, and combine their engines into a metropolitan brigade; thus guarding the town from fire as they do from robbery by the police. If people will not protect themselves by insuring, the State should protect them, and make them pay for it. An excellent system prevails in most parts of Germany of levying a rate at the close of the year upon all the inhabitants sufficient to cover the loss from fires during the past twelve-month. As every householder has a pecuniary interest in the result, he keeps a bucket and belt, and sallies out to extinguish the conflagration in his neighbour's premises. If the rate were adopted in London, and the present enormous duty on insurances reduced, the cost to each person would be hardly more pence than it is pounds at present to the provident few.

Mr. Samuel Brown, of the Institute of Actuaries, after analysing the returns of Mr. Braidwood, as well as the reports in the '*Mechanics' Magazine*,' by Mr. Baddeley, who has devoted much attention to the subject, drew up some tables of the times of the year, and hours of the day, at which fires are most frequent. It would naturally be supposed that the winter would show a vast preponderance over the summer months; but the difference is not so great as might be expected. December and January are very prolific of fires, as in these months large public buildings are heated by flues, stoves, and boilers; but the other months share mishaps of the kind pretty equally, with the exception that the hot and dry periods of summer and autumn are marked by the most destructive class of conflagrations, owing to the greater inflammability of the materials, than in the damper portions of the year. This, from the desiccating nature of the climate, is especially the case in Canada and the United States, and, coupled with the extensive use of wood in building, has a large

large influence in many parts of the Continent. The following list of all the great fires which have taken place for the last 100 years will bear out our statement :—

Month.	Description of Property, &c.	Place.	Value of Property Destroyed.	Year.
January ..	Webb's Sugar-house	Liverpool	£4,600	1829
	Lancelot's-hey		198,000	1833
	Town-hall and Exchange ..		45,000	1795
	Caxton Printing Office ..			1821
	Dublin and Co. Warehouse			1834
	Suffolk-street		40,000	1818
	Mile End	London	200,000	1834
	Royal Exchange			1838
February	York Minster	York .. ..	..	1829
	3 West India Warehouses	London	300,000	1829
	House of Commons	Dublin .. ..	..	1792
	Argyle Rooms	London .. ..	..	1830
	Camberwell Church .. ..	.. ..	..	1841
	Custom House .. ..	.. ..	..	1814
	Hop Warehouse	Southwark ..	..	1851
	J.F. Pawson and Co.'s Ware-	St. Paul's Church	40,000	1853
	houses	Yard		
	Pickford's Wharf	London .. ..	..	1824
March	Goree Warehouses	Liverpool ..	50,000	1846
	New Orleans	United States ..	\$650,000	1853
	15,000 houses at Canton ..	China .. ..	..	1820
	13,000 houses	Peru .. ..	..	1799
	Manchester	England .. ..	..	1792
	Fawcett's Foundry	Liverpool ..	£41,000	1843
	Oil Street .. ..	.. ..	12,600	1844
	Apothecaries' Hall .. ..	.. ..	7000	1844
	Sugar House,, Harrington-	.. ..	30,000	1830
April	street			
	1000 Buildings	Pittsburg ..	\$1,400,000	1845
	Savannah	United States ..	\$300,000	1852
	Parkshead, Bacon-street ..	Liverpool ..	£ 36,000	1851
	Windsor Forest	England .. ..	..	1785
	Margetson's Tan-yard, Ber-	London	36,000	1852
	mondsey			
	1158 Buildings, Charleston	United States ..	..	1838
May	Horsleydown	London .. ..	..	1780
	Dockhead	London .. ..	..	1785
	Great Fire, 1749 houses ..	Hamburgh ..	..	1842
	23 Steamboats at St. Louis	United States ..	\$600,000	1849
	15,000 Houses	Quebec .. ..	..	1845
	York Minster	York .. ..	..	1840
	Duke's Warchouses	Liverpool ..	..	1843
	Okell's Sugar-house .. ..	.. ..	..	1799
	Gibraltar Row .. ..	.. ..	..	1838
	Liver Mills .. ..	.. ..	£8,700	1841
	Billingsgate	London .. ..	..	1809

June

Month.	Description of Property, &c.	Place.	Value of Property Destroyed.	Year.
June	Rotherhithe	London		1765
	Copenhagen	Denmark ..		1759
	Montreal	Canada	\$1,000,000	1852
	St. John	Newfoundland	..	1846
	Louisville	United States ..	\$100,000	1853
	47 persons, Quebec Theatre	Canada .. ..	..	1846
	1300 houses, Quebec .. ..	,, .. ..	..	1845
	Gutta Percha Co., Wharf } Road	London	£23,000	1853
	Humpherys's Warehouse, } Southwark		100,000	1851
July ..	Hindon	Wiltshire ..		1754
	15,000 Houses	Constantinople		1756
	12,000 Houses	Montreal		1852
	300 Houses	Philadelphia ..		1850
	300 Buildings	North America	\$160,000	1846
	302 Stores	New York ..	\$1,200,000	1846
	Apothecaries Hall	Liverpool ..	..	1845
	Glover's Warehouses		£17,000	1851
	Dockyard	Portsmouth ..	..	1770
	Wapping	London	1,000,000	1794
	Ratcliffe Cross	,,		1794
	Varna	Turkey		1854
August ..	Dublin	Ireland		1853
	Gravesend	England	60,000	1847
	Walker's Oil Mill	Dover	30,000	1853
	Falmouth Theatre	Falmouth ..	..	1792
	Buildings, Albany	United States ..	\$600,000	1849
	10,000 Houses	Constantinople	..	1782
	Smithfield	London	£100,000	1822
	East Smithfield			1840
	Hankside			1814
September	Gateshead	England ..		1854
	46 Buildings	New York	\$500,000	1839
	200 Houses, Brooklyn	,, ..	150,000	1848
	Scott, Russell, and Co., Ship } Builders, Mill Wall	London ..	£80,000	1853
	St. Paul's Church, Covent } Garden .. .. .		..	1795
	60 Houses, Rotherhithe .. ..		..	1791
	Astley's Amphitheatre .. ..		..	1794
	Mark Lane		150,000	1850
	Covent Garden Theatre			1808
	Store Street and Tottenham- } Court-Road			1802
	Macfee's	Liverpool	40,000	1846
	Gorees		400,000	1802
	Formby Street		380,000	1842
	Cowdray House	Sussex ..		1793
October ..	52 Buildings	Philadelphia	\$100,000	1839
	Grimsdell's, Builder's Yard	Spitalfields	..	1852
	Withwith's Mills	Halifax ..	£35,000	1853

October,

Month.	Description of Property, &c.	Place.	Value of Property Destroyed.	Year.
October, <i>continued.</i>	Robert-street	North Liverpool	£150,000	1838
	Lancelot's-hey	Liverpool ..	80,000	1854
	Memel Great Fire	Prussia .. ..	..	1854
	London Wall	London	84,000	1849
	20 Houses, Rotherhithe .. ..	.. ..	..	1790
	Lancelot's-hey	Liverpool ..	30,000	1834
	Wapping	London	100,000	1823
	Houses of Parliament .. ..	.. ..	..	1834
	Pimlico .. ..	.. ..	..	1839
November	Royal Palace	Lisbon .. ..	..	1794
	New York	United States	..	1835
	20 Houses, Shadwell	London .. ..	..	1796
	Aldersgate Street .. ..	.. ..	100,000	1783
	Cornhill .. ..	.. ..	..	1765
	Liver Street	Liverpool ..	6,000	1829
	Wright and Aspinall, Oxford Street	London	50,000	1826
	Hill's Rice Mills .. ..	.. ..	5,000	1848
December	Dock Yard	Portsmouth ..	..	1776
	Patent Office and Post Office	Washington ..	..	1836
	600 Warehouses	New York ..	\$1,000,000	1835
	Fenwick Street	Liverpool ..	£36,000	1831
	Brancker's Sugar-house ..	.. ..	34,000	1843

(Extracted from the Royal Insurance Company's Almanack, 1854.)

One reason, perhaps, why there is such a general average in the number of conflagrations throughout the year is that the vast majority occur in factories and workshops where fire is used in summer as well as winter. This supposition appears at first sight to be contradicted by the fact that nearly as many fires occur on Sunday as on any other day of the week. But when it is remembered that in numerous establishments it is necessary to keep in the fires throughout that day, and as in the majority of cases a very inadequate watch is kept, it is at once apparent why there is no immunity from the scourge. Indeed some of the most destructive fires have broken out on a Sunday night or on a Monday morning—no doubt because a large body of fire had formed before it was detected. A certain number of accidents occur in summer in private houses from persons on hot nights opening the window behind the toilet glass in their bedrooms, when the draught blows the blind against the candle. Swallows do not more certainly appear in June, than such mishaps are found reported at the sultry season.

If we watch still more narrowly the habits of fires, we find that they are active or dormant according to the time of the day. Thus, during a period of nine years, the percentage regularly increased

increased from 1·96 at 9 o'clock A.M., the hour at which all households might be considered to be about, to 3·34 at 1 P.M., 3·55 at 5 P.M., and 8·15 per cent. at 10 P.M., which is just the time at which a fire left to itself by the departure of the workmen would have had swing enough to become visible.

The origin of fires is now so narrowly inquired into by the officers of the Brigade, and by means of inquests, that we have been made acquainted with a vast number of curious causes, which would never have been suspected. From an analysis of fires which have occurred since the establishment of the Brigade, we have constructed the following Tables :—

Curtains	2,511	Smoking Tobacco	166
Candle	1,178	Smoking Ants	1
Flues	1,555	Smoking in Bed	2
Stoves	494	Reading in ditto	22
Gas	932	Sewing in ditto	4
Light dropped down Area ..	13	Sewing by Candle	1
Lighted Tobacco falling down } ditto }	7	Lime overheating	44
Dust falling on horizontal Flue	1	Waste ditto	43
Doubtful	76	Cargo of Lime ditto	2
Incendiarism	89	Rain slacking ditto	5
Carelessness	100	High Tide	1
Intoxication	80	Explosion	16
Dog	6	Spontaneous Combustion	43
Cat	19	Heat from Sun	8
Hunting Bugs	15	Lightning	8
Clotheshorse upset by Monkey	1	Carboy of Acid bursting	2
Lucifers	80	Drying Linen	1
Children playing with ditto ..	45	Shirts falling into Fire	6
Rat gnawing ditto	1	Lighting and Upsetting Naphtha } Lamp }	58
Jackdaw playing with ditto ..	1	Fire from Iron Kettle	1
Rat gnawing Gaspipe	1	Sealing Letter	1
Boys letting off Fireworks ..	14	Charcoal fire of a Suicide	1
Fireworks going off	63	Insanity	5
Children playing with Fire ..	45	Bleaching Nuts	7
Spark from ditto	243	Unknown	1,323
Spark from Railway	4		

Among the more common causes of fire (such as gas, candle, curtains taking fire, children playing with fire, stoves, &c.) it is remarkable how uniformly the same numbers occur under each head from year to year. General laws obtain as much in small as in great events. We are informed by the Post-Office authorities that about eight persons daily drop their letters into the post without directing them—we know that there is an unvarying percentage of broken heads and limbs received into the hospitals—and here we see that a regular number of houses take fire, year by year, from the leaping out of a spark, or the dropping of a smouldering pipe of tobacco. It may indeed be a long time before another conflagration will arise from ‘a monkey upsetting

upsetting a clothes-horse,' but we have no doubt such an accident will recur in its appointed cycle.

Although gas figures so largely as a cause of fire, it does not appear that its rapid introduction of late years into private houses has been attended with danger. There is another kind of light, however, which the insurance offices look upon with terror, especially those who make it their business to insure farm property. The assistant-secretary of one of the largest fire-offices, speaking broadly, informed us that the introduction of the lucifer-match *caused them an annual loss of ten thousand pounds!* In the foregoing list we see in how many ways they have given rise to fires.

Lucifers going off probably from heat	..	..	80
Children playing with lucifers	..	..	45
Rat gnawing lucifers	..	..	1
Jackdaw playing with lucifers	..	..	1

127

One hundred and twenty-seven known fires thus arise from this single cause; and no doubt many of the twenty-five fires ascribed to the agency of cats and dogs were owing to their having thrown down boxes of matches at night—which they frequently do, and which is almost certain to produce combustion. The item 'rat gnawing lucifer' reminds us to give a warning against leaving about wax lucifers where there are either rats or mice, for these vermin constantly run away with them to their holes behind the inflammable canvas, and eat the wax until they reach the phosphorus, which is ignited by the friction of their teeth. Many fires are believed to have been produced by this singular circumstance. How much, again, must lucifers have contributed to swell the large class of conflagrations whose causes are unknown! Another cause of fire, which is of recent date, is the use of naphtha in lamps—a most ignitable fluid when mixed in certain proportions with common air. 'A delightful novel' figures as a proximate, if not an immediate, cause of twenty-two fires. This might be expected, but what can be the meaning of a fire caused by a high tide? When we asked Mr. Braidwood the question, he answered, 'Oh! we always look out for fires when there is a high tide. They arise from the heating of lime upon the addition of water.' Thus rain, we see, has caused four conflagrations, and simple over-heating forty-four. The lime does no harm as long as it is merely in contact with wood, but if iron happens to be in juxtaposition with the two, it speedily becomes red-hot, and barges on the river have been sunk, by reason of their bolts and iron knees burning holes in their

their bottoms. Of the singular entry, 'rat gnawing a gaspipe,' the firemen state that it is common for rats to gnaw leaden service pipes, for the purpose, it is supposed, of getting at the water, and in this instance the grey rodent laboured under a mistake, and let out the raw material of the opposite element. Intoxication is a fruitful cause of fires, especially in public houses and inns.

It is commonly imagined that the introduction of hot water, hot air, and steam pipes, as a means of heating buildings, cuts off one avenue of danger from fire. This is an error. Iron pipes, often heated up to 400° , are placed in close contact with floors and skirting-boards, supported by slight diagonal props of wood, which a much lower degree of heat will suffice to ignite. The circular rim supporting a still at the Apothecaries' Hall, which was used in the preparation of some medicament that required a temperature of only 300° , was found not long ago to have charred a circle at least a quarter of an inch deep in the wood beneath it, in less than six months. Mr. Braidwood, in his evidence before a Committee of the House of Lords in 1846, stated that it was his belief that by long exposure to heat, not much exceeding that of boiling water, or 212° , timber is brought into such a condition that it will fire without the application of a light. The time during which this process of desiccation goes on, until it ends in spontaneous combustion, is, he thinks, from eight to ten years—*so that a fire might be hatching in a man's premises during the whole of his lease without making any sign!*

Mr. Hosking, in his very useful and sensible little 'Guide to the proper Regulation of Buildings in Towns,' quotes the following case, which completely confirms Mr. Braidwood's opinion, and explodes the idea that heat applied through the medium of pipes must be safe.

'Day and Martin's well-known blacking manufactory in High Holborn was heated by means of hot water passing through iron tubes into the various parts of the building. In December, 1848, the wooden casing and other woodwork about the upright main pipes were found to be on fire, and from no other cause that could be discovered than the constant exposure for a long time of the wood to heat from the pipes. In this case the pipes were not in contact with the wooden casing, but they were stayed and kept upright by cross fillets of wood, which touched them, and these it was which appeared to have taken fire. The small circulating pipes which conveyed the hot water throughout the several chambers were raised from the floor to about the extent of their own diameter, and the floors showed no signs of fire where the pipes were so removed; but in *every case* where the prop or saddle which held the pipe up from the floor had been displaced, and the pipe had been

been allowed to sag and touch the floor, *the boards were charred*. It was understood that the temperature of the water in the pipes never much exceeded 300°. The practical teaching of this case clearly is, that pipes should on no consideration be placed nearer to wood than the distance of their own diameters. Wood dried in the thorough manner we have mentioned is so liable to catch fire at the momentary proximity of flame, that practical men imagine there must be an atmosphere of some kind surrounding it of a highly inflammable nature. In cases of pine wood we could well understand such a theory, as we know that a stick thrust into the fire will emit from its free end a volatile spirit of turpentine, which lights like a jet of gas.

'Mercers' Hall, burnt in 1853, was the victim of its hot-water pipes, which had not been in work more than four or five years. The vaulted room in the British Museum, which contains some of the Nineveh marbles, was fired—or rather the carpenters' work about—in a similar manner; and if report tells the truth, the new Houses of Parliament have been on fire several times already from a similar cause.'

Under the heads 'Incendiarism,' 'Doubtful,' and 'Unknown' are included all the cases of wilful firing. The return Incendiarism is never made unless there has been a conviction, which rarely takes place, as the offices are only anxious to protect themselves against fraud, and do not like the trouble or bad odour of being prosecutors on public grounds. If the evidence of wilful firing, however, is conclusive, the insured, when he applies for his money, is significantly informed by the secretary that unless he leaves the office *he will hang him*. Though arson is no longer punished by death, the hint is usually taken. Now and then such flagrant offenders are met with, that the office cannot avoid pursuing them with the utmost rigour of the law. Such, in 1851, was the case of a 'respectable' solicitor, living in Lime Street, Watling Street, who had insured his house and furniture for a sum much larger than they were worth. The means he adopted for the commission of his crime without discovery were apparently sure; but it was the very pains he took to accomplish his end which led to his detection. He had specially made to order a deep tray of iron, in the centre of which was placed a socket: the tray he filled with naphtha, and in the socket he put a candle, the light of which was shaded by a funnel. The candle was one of the kind which he used for his gig-lamp, for he kept a gig, and was calculated to last a stated time before it reached the naphtha. He furtively deposited the whole machine in the cellar, within eight inches of the wooden floor, in a place constructed to conceal it. The attorney went out, and on coming back again found, as he expected, that his house was on fire. Unfortunately, however, for him—if it is ever a misfortune to a scoundrel to be detected—it was put out at a very early stage;

and the firemen, whilst in the act of extinguishing it, discovered this infernal machine. The order to make it was traced to the delinquent: a female servant, irritated at the idea of his having left her in the house to be burnt to death, gave evidence against him; he was tried and convicted, and is now expiating his crime at Norfolk Island. Plans for rebuilding this villain's house, and estimates of the expense, were found afterwards among his papers.

The class 'Doubtful' includes all those cases in which the offices have no moral doubt that the fire has been wilful, but are not in possession of legal evidence sufficient to substantiate a charge against the offender. In most of these instances, however, the insured has *his reasons* for taking a much smaller sum than he originally demanded. Lastly, we have the 'Unknown,' to which 1323 cases are put down, one of the largest numbers in the entire list, though decreasing year by year. Even of these a certain percentage are supposed to be wilful. There is no denying that the crime of arson owes its origin entirely to the introduction of fire insurance; and there can be as little doubt that of late years it has been very much increased by the pernicious competition for business among the younger offices, which leads them to deal too leniently with their customers; or, in other words, to pay the money, and ask no questions. It is calculated that *one fire in seven which occur among the small class of shopkeepers in London is an incendiary fire*. Mr. Braidwood, whose experience is larger than that of any other person, tells us that the greatest ingenuity is sometimes exercised to deceive the officers of the insurance company as to the value of the insured stock. In one instance, when the Brigade had succeeded in extinguishing the fire, he discovered a string stretched across one of the rooms in the basement of the house, on which ringlets of shavings dipped in turpentine were tied at regular intervals. On extending his investigations he ascertained that a vast pile of what he thought were pounds of moist sugar consisted of parcels of brown paper, and that the loaves of white sugar were made of plaster of Paris. Ten to one but the 'artful dodge,' which some scoundrel flatters himself is peculiarly his own, has been put in practice by hundreds of others before him. For this reason, fires that are wilful generally betray themselves to the practised eye of the Brigade. When an event of the kind 'is going to happen' at home, a common circumstance is to find that the fond parent has treated the whole of his family to the theatre.

There is another class of incendiary fires which arise from a species of monomania in boys and girls. Not many years ago,
the

the men of the Brigade were occupied for hours in putting out no less than half a dozen fires which broke out one after another in a house in West Smithfield; and it was at last discovered that they were occasioned by a youth who went about with lucifers and *slily ignited everything that would burn. He was caught in the act of firing a curtain in the very room in which a fireman was occupied in putting out a blaze. A still more extraordinary case took place in the year 1848, at Torluck House, in the Isle of Mull. On Sunday, the 11th of November, the curtains of a bed were ignited, as was supposed, by lightning; a window-blind followed; and immediately afterwards the curtains of five rooms broke out one after another into a flame; even the towels hanging up in the kitchen were burnt. The next day a bed took fire, and it being thought advisable to carry the bed-linen into the coach-house for safety, it caught fire three or four times during the process of removal. In a few days the phenomenon was renewed. The furniture, books, and everything else of an inflammable nature, were, with much labour, taken from the mansion, and again some body-linen burst into a flame on the way. Even after these precautions had been taken, and persons had been set to watch in every part of the house, the mysterious fires continued to haunt it until the 22nd of February, 1849. It was suspected from the first that they were the act of an incendiary, and upon a rigid examination of the household before the Fiscal-General and the Sheriff the mischief was traced to the daughter of the housekeeper, a young girl, who was on a visit to her mother. She had effected her purpose, which was perfectly motiveless, by concealing combustibles in different parts of the house.

The most ludicrous conflagration that perhaps ever occurred was that at Mr. Phillips's workshops, when the whole of his stock of instruments for extinguishing flame were at one fell swoop destroyed. 'Tis rare to see the engineer hoist with his own petard,' says the poet; and certainly it was a most laughable *contre-temps* to see the fire-engines arrive at the manufactory just in time to witness the fire-annihilators annihilated by the fire. A similar mishap occurred to these unfortunate implements at Paris. In juxtaposition with this case we are tempted to put another, in which the attempt at extinction was followed by exactly the opposite effects. A tradesman was about to light his gas, when, finding the cock stiff, he took a candle to see what was the matter; whilst attempting to turn it, the screw came out, and with it a jet of gas, which was instantly fired by the candle. The blaze igniting the shop, a passer-by seized a wooden pail and threw its contents upon the flames, which

flared up immediately with tenfold power. It is scarcely necessary to state that the water was whisky, and that the country was Old Ireland.

Spontaneous combustion is at present very little understood, though chemists have of late turned their attention to the subject. It forms, however, no inconsiderable item in the list of causes of fires. There can be no question that many of those that occur at railway-stations and buildings, are due to the fermentation which arises among oiled rags. Over-heating of waste, which includes shoddy, sawdust, cotton, &c., is a fearful source of conflagrations. The cause of most fires which have arisen from spontaneous combustion is lost in the consequence. Cases now and then occur where the firemen have been able to detect it, as for instance at Hibernia Wharf in 1846, one of Alderman Humpherys's warehouses. It happened that a porter had swept the sawdust from the floor into a heap, upon which a broken flask of olive-oil that was placed above dripped its contents. To these elements of combustion the sun added its power, and sixteen hours afterwards the fire broke out. Happily it was instantly extinguished; and the agents that produced it were caught, red-handed as it were, in the act. The chances are that such a particular combination of circumstances might not occur again in a thousand years. The sawdust will not be swept again into such a position under the oil, or the bottle will not break over the sawdust, or the sun will not shine in on them to complete the fatal sum. It is an important fact, however, to know that oiled sawdust, warmed by the sun, will fire in sixteen hours, as it accounts for a number of conflagrations in saw-mills, which never could be traced to any probable cause.

By means of direct experiment we are also learning something on the question of explosions. It used to be assumed that gunpowder was answerable for all such terrible effects in warehouses where no gas or steam was employed; and as policies are vitiated by the fact of its presence, unless declared, many squabbles have ensued between insurers and insured upon this head alone. At the late great fire at Gateshead, a report having spread that the awful explosion which did so much damage arose from the illicit stowage of seven tons of gunpowder in the Messrs. Sisson's warehouse, the interested insurance companies offered a reward of 100*l.* to elicit information. The experiments instituted, however, by Mr. Pattinson, in the presence of Captain Du Cane, of the Royal Engineers, and the coroner's jury impanelled to inquire into the matter, showed that the water from the fire-engine falling upon the mineral and chemical substances in store was sufficient to account for the result. The following were the experiments
tried

tried at Mr. Pattinson's works at Felling, about three miles from Gateshead :— •

‘ Mr. Pattinson first caused a metal pot to be inserted in the ground until its top was level with the surface; and having put into it 9 lbs. of nitrate of soda and 6 lbs. of sulphur, he ignited the mass; and then, heating it to the highest possible degree of which it was susceptible, he poured into it about a quart of water. The effect was an immediate explosion (accompanied by a loud clap), which would have been exceedingly perilous to any person in its immediate vicinity. The experiment was next made under different conditions: The pot into which the sulphur and nitrate of soda were put was covered over the top with a large piece of thick metal of considerable weight; and above that again were placed several large pieces of clay and earth. It was deemed necessary to try this experiment in an open field, away from any dwelling-house, and which admitted of the spectators placing themselves at a safe distance from the spot. The materials were then ignited as before; and when in the incandescent state, water was poured upon the mass down a spout. The result was but a comparatively slight explosion, and which scarcely disturbed the iron and clods placed over the mouth of the vessel. Another experiment of the kind was made with the same result. At length, a trial having been made for the third time, but with this difference, that the vessel was covered over the top with another similar vessel, and that the water was poured upon the burning sulphur and nitrate of soda with greater rapidity than before, by slightly elevating the spout, the effect was to blow up the pot on the top into the air to a height of upwards of seventy feet, accompanied by a loud detonation. With this the coroner and jury became convinced that, whether or not the premises in Hillgate contained gunpowder, they contained elements as certainly explosive, and perhaps far more destructive.’

We may here mention as a curious result of the Gateshead fire that several tons of lead, whilst flowing in a molten state, came in contact with a quantity of volatilised sulphur. Thus the lead became re-converted into lead-ore, or a sulphuret of lead, which, as it required to be re-smelted, was thereby debased in value from some twenty-two to fifteen shillings a ton.

The great fire, again, which occurred in Liverpool in October last, was occasioned by the explosion of spirits of turpentine, which blew out, one after another, seven of the walls of the vaults underneath the warehouse, and in some cases destroyed the vaulting itself, and exposed to the flames the stores of cotton above. Surely some law is called for to prevent the juxtaposition of such inflammable materials. The turpentine is said to have been fired by a workman who snuffed the candle with his fingers, and accidentally threw the snuff down the bung-hole of one of the barrels of turpentine. The warehouses burnt were built upon Mr. Fairbairn's

bairn's new fireproof plan, which the Liverpool people introduced, some years ago, at a great expense to the town.

Water alone brought into sudden contact with red-hot iron is capable of giving rise to a gas of the most destructive nature—witness the extraordinary explosions that are continually taking place in steam-vessels, especially in America, which mostly arise from the lurching of the vessel when waiting for passengers, causing the water to withdraw from one side of the boiler, which rapidly becomes red hot. The next lurch in an opposite direction precipitates the water upon the highly-heated surface, and thus explosive gas, in addition to the steam, is generated faster than the safety-valves can get rid of it.

A very interesting inquiry, and one of vital importance to the actuaries of fire-insurance companies, is the relative liability to fire of different classes of occupations and residences. We already know accurately the number of fires which occur yearly in every trade and kind of occupation. What we do not know, and what we want to know, is the proportion the tenements in which such trades and occupations are carried on, bear to the total number of houses in the metropolis. The last census gives us no information of this kind, and we trust the omission will be supplied the next time it is taken. According to Mr. Braidwood's returns for the last twenty-one years, the number of fires in each trade, and in private houses, has been as follows:—

Private Houses	4,638	Wine and Spirit Merchants ..	118
Lodgings	1,304	Tailors	113
Victuallers	715	Hotels and Club-houses ..	107
Sale Shops and Offices ..	701	Tobacconists	105
Carpenters and Workers in Wood	621	Eating-houses	104
Drapers, of Woollen and Linen	372	Booksellers and Binders ..	103
Bakers	311	Ships	102
Stables	277	Printers and Engravers ..	102
Cabinet Makers	233	Builders	91
Oil and Colour men	230	Houses unoccupied	89
Chandlers	178	Tallow-chandlers	87
Grocers	162	Marine store Dealers ..	75
Tinmen, Braziers, and Smiths ..	158	Saw-mills	67
Houses under Repair and Building	150	Firework Makers	66
Beershop	142	Warehouses	63
Coffee-shops and Chop-houses ..	139	Chemists	62
Brokers and Dealers in Old } Clothes	134	Coachmakers	50
Hatmakers	127	Warehouses (Manchester) ..	49
Lucifer-match makers	120	Public Buildings	46

If we look at the mere number of fires, irrespective of the size, of the industrial group upon which they committed their ravages, houses would appear to be hazardous according to the order in which we have placed them. Now, this is manifestly absurd, inasmuch as private houses stand at the head of the list, and

and it is well known that they are the safest from fire of all kinds of tenements. Mr. Brown, of the Society of Actuaries, who has taken the trouble to compare the number of fires in each industrial group with the number of houses devoted to it, as far as he could find any data in the Post-office Directory, gives the following average annual percentage of conflagrations, calculated on a period of fifteen years :—

Lucifer-match makers	.. ..	30·00	Beershops	.. ..	1·31
Lodging-houses	.. ..	16·51	Booksellers	.. ..	1·18
Hatmakers	.. ..	7·74	Coffee-shops and Coffee-houses		1·2
Chandlers	.. ..	3·88	Cabinet Makers	.. ..	1·12
Drapers	.. ..	2·67	Licensed Victuallers	..	·86
Tinmen, Braziers, and Smiths		2·42	Bakers	.. ..	·75
Carpenters	.. ..	2·27	Wine Merchants	.. ..	·61
Cabinet Makers	.. ..	2·12	Grocers	.. ..	·34
Oil and Colour men	.. ..	1·56			

It will be seen that this estimate in a great measure inverts the order of ‘dangerous,’ as we have ranged them in the previous table, making those which from their aggregate number seemed to be the most hazardous trades appear the least so, and *vice versâ*. Thus lucifer-match makers have a bad pre-eminence; indeed they are supposed to be subject to a conflagration every third year, while the terrible victuallers, carpenters, mercers, and bakers, at the top of the column, shrink to the bottom of the list. These conclusions nevertheless are only an approximation to the truth, since it is impossible to procure a correct return of the houses occupied by different trades. Even if a certain class of tenements is particularly liable to fire, it does not follow that it will be held to be very hazardous to the insurers. Such considerations are influenced by another question, Are the contents of houses forming the group of that nature that, in case of their taking fire, they are likely to be totally destroyed, seriously, or only slightly damaged? For instance, lodging-houses are very liable to fire; but they are very seldom burnt down or much injured. Out of 81 that suffered in 1853 not one was totally destroyed; only four were extensively affected; the very large majority, 77, were slightly scathed from the burning of window and bed curtains, &c. Among the trades which are too hazardous to be insured at any price are—we quote from the Tariff of the ‘County Fire-office’—floor-cloth manufacturers, gunpowder dealers, hatters’ ‘stock in the stove,’ lamp-black makers, lucifer-match makers, varnish-makers, and wadding-manufacturers; whilst the following are considered highly hazardous,—bone-crushers, coffee-roasters, composition-ornament makers, curriers, dyers, feather-stovers, flambeau-makers, neckling-houses, hemp and flax dressers, ivory-black makers, japanners and japan-makers, laboratory-chemists, patent japan-leather manufacturers,

nufacturers, lint-mills, rough-fat melters, musical-instrument makers, oil and colour men, leather-dressers, oiled silk and linen makers, oil of vitriol manufacturers, pitch-makers, rag-dealers, resin-dealers, saw-mills, seed-crushers, ship-biscuit bakers, soap-makers, spermaceti and wax refiners, sugar-refiners, tar dealers and boilers, thatched houses in towns, and turpentine-makers.

The great mass of these trades bear 'hazardous' upon the very face of them; but it is not equally apparent why that of a hatter should be so very dangerous, and particular portions of his stock uninsurable. We are given to understand that the stoves at which their manufacture is carried on, and the shell-lac and willow, are the causes of this proneness to conflagrations. The memorable fire at Fenning's Wharf, which burnt with a fury to which that at the Royal Exchange and at the Houses of Parliament was a mere bonfire, originated at a hatter's on London Bridge, from which place it speedily spread to Alderman Humpherys's warehouses in the rear, leaped across Tooley Street—at this spot 60 feet wide—and thus invaded the great river-side wharf. The two floating engines belonging to the Brigade were brought into service on the occasion, and although they threw between them fourteen hundred gallons of water a minute to the height of a hundred feet, they had not the slightest effect upon the burning mass.

Nothing shows better the relative degrees of hazard than the different rates charged for insurance. Thus an ordinary dwelling-house pays but 1s. 6d. per cent., while a sugar-refinery pays at least two, and sometimes three guineas per cent., or from 30 to 40 times as much. The same class of houses pay different rates according to their locality. The residence which is charged 1s. 6d. in London, is, in St. John's, Newfoundland—a town famous, or rather infamous for fires—charged by our English offices 1l. 11s. 6d. per cent. Probably the heaviest loss the Phoenix office ever sustained was by the fire of St. John's, in 1846.

It is a notable fact that the city of London, which is perhaps the most densely inhabited spot the world has ever seen, has long been exempt from conflagrations involving a considerable number of houses. 'The devouring element,' it is true, has made many meals from time to time of huge warehouses and public buildings; but since the great fire of 1666 it has ceased to gorge upon whole quarters of the town. We have never had, since that memorable occasion, to record the destruction of a thousand houses at a time, a matter of frequent occurrence in the United States and Canada—indeed in all parts of Continental Europe. The
fires

fires which have proved fatal to large plots of buildings in the metropolis, have in every instance taken place without the sound of Bow bells. A comparison between the number of fires which occurred between the years 1838 and 1843, in 20,000 houses situate on either side of the Thames, shows at once the superior safety of its northern bank, the annual average of fires on the latter being only 20 against 36 on the southern side. For this exemption we have to thank the great disaster, if we might so term what has turned out a blessing. At one fell swoop it cleared the City, and swept away for ever the dangerous congregation of wooden buildings and narrow streets which were always affording material for the flame.

Mr. Peter Cunningham, in his '*Handbook of London*,'* gives the following curious information respecting its supposed origin:—

'The fire of London, commonly called the Great Fire, commenced on the east side of this lane (Pudding-lane), about one or two in the morning of Sunday, September 2nd, 1666, in the house of Farryner, the king's baker.

'It was the fashion of the true blue Protestants of the period to attribute the fire to the Roman Catholics, and when, in 1681, Oates and his plot strengthened this belief, the following inscription was affixed on the front of this house (No. 25 I believe), erected on the site of Farryner, the baker's:—

'“Here, by the permission of Heaven, hell broke loose upon this Protestant city, from the malicious hearts of barbarous priests by the hand of their agent, Hubert, who confessed, and on the ruins of this place declared the fact for which he was hanged, viz., that here began that dreadful fire which is described on and perpetuated by the neighbouring pillar, erected anno 1681, in the mayoralty of Sir Peter Ward, knight.”

'This celebrated inscription, set up pursuant to an order of the Court of Common Council, June 17th, 1681, was removed in the reign of James II., replaced in the reign of William III., and finally taken down “on account of the stoppage of passengers to read it.” Eutick, who makes addition to Maitland in 1756, speaks of it “as lately taken away.” The house was “rebuilt in a very handsome manner.”

'The inscribed stone is still preserved, it is said, in a cellar in Pudding-lane. Hubert was a French papist, of six-and-twenty years of age, the son of a watchmaker at Rouen, in Normandy. He was seized in Essex, confessed he began the fire, and, persisting in his confession, was hanged, upon no other evidence than his own. He stated in his examination that he had been “suborned in Paris to this action,” and that three more “combined to do the same thing. They asked him if

* Repeated reference to this valuable work has more than confirmed the opinion we originally expressed of it. There are few books of greater utility than what is in fact a '*History of London Past and Present*.'

he knew the place where he first put fire. He answered he knew it very well, and would show it to anybody." He was then ordered to be blindfolded, and carried to several places of the City, that he might point out the house. They first led him to a place at some distance from it, opened his eyes, and asked him if that was it; to which he answered, "No, it was nearer to the Thames." "The house and all which were near it," says Clarendon, "were so covered and buried in ruins, that the owners themselves, without some infallible mark, could very hardly have said where their own house had stood; but this man led them directly to the place, described how it stood, the shape of the little yard, the fashion of the doors and windows, and where he first put the fire; and all this with such exactness, that they who had dwelt long near it could not so perfectly have described all particulars." Tillotson told Burnet that Howell (the then Recorder of London) accompanied Hubert on this occasion, "was with him and had much discourse with him, and that he concluded it was impossible it could be a melancholy dream." This, however, was not the opinion of the judges who tried him. "Neither the judges," says Clarendon, "nor any present at the trial, did believe him guilty, but that he was a poor distracted wretch; weary of his life, and chose to part with it this way." We may attribute the fire with safety to another cause than a Roman conspiracy. We are to remember that the flames originated in the house of a baker; that the season had been unusually dry; that the houses were of wood, overhanging the road-way (pent-houses they were called), so that the lane was even narrower than it is now, and that a strong east wind was blowing at the time. It was thought very little of at first. Pepys put out his head from his bedroom-window in Seething-lane, a few hours after it broke out, and returned to bed again, as if it were nothing more than an ordinary fire, a common occurrence, and likely to be soon subdued. The Lord Mayor (Sir Thomas Bludworth) seems to have thought as little of it till it was too late. People appear to have been paralysed, and no attempt of any consequence was made to check its progress. For four successive days it raged and gained ground, leaping after a prodigious manner from house to house and street to street, at great distances from one another. Houses were at length pulled down, and the flames, still spreading westward, were at length stopped at the Temple Church in Fleet-street, and Pic-corner in Smithfield. In these four days 13,200 houses, 400 streets, and 89 churches, including the cathedral church of St. Paul, were destroyed, and London lay literally in ruins. The loss was so enormous, that we may be said still to suffer from its effects. Yet the advantages were not few. London was freed from the plague ever after; and we owe St. Paul's, St. Bride's, St. Stephen's Walbrook, and all the architectural glories of Sir Christopher Wren, to the desolation it occasioned.

In addition to these advantages we acquired another, that of **PARTY-WALLS**—a safeguard which has prevented fires from spreading in the City, when whole streets have been swept away
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in a few hours in other parts of the metropolis, and especially in what might be termed the water-side suburbs of London—Rotherhithe, Greenwich, and Gravesend. The Act by which party-walls were enforced came into operation immediately prior to the rebuilding of the town, and has been rendered more stringent and effective from time to time by various amendments. The Building Act of the 7th and 8th of Queen Victoria contains the important enactment, that ‘no warehouse shall exceed 200,000 cubic feet in contents.’ Fire becomes unmanageable when it has access to large stores of combustible matter; under such conditions it acquires a ‘fortified position,’ and cannot, in the vast majority of cases, be reſcued unless by an early surprise. As the very heart of London is largely occupied with Manchester warehouses full of the most inflammable materials, the safety of the capital depends upon this restrictive law. The Manchester-warehousemen nevertheless have managed to set that part of the Act at defiance. Let us take, as the latest and most flagrant example, Cook’s warehouses. This structure, which within these last two years has raised its enormous bulk in St. Paul’s Churchyard, and actually dwarfed the metropolitan cathedral by the propinquity of its monotonous mass, contains 1,100,000 cubic feet of space open from end to end, or *nine hundred thousand feet more than it is entitled to possess.* If we were to take twenty-five ordinary-sized dwelling-houses and pull down their party-walls, we should have just the state of things which is here presented to us. But it will be asked, if it is against the law, why do not the proper officers interfere? Where are the City surveyors? The reason, good reader, is this: the Manchester-warehousemen of late years have adopted a new reading of the law—a reading which we believe no judge would allow, but which the surveyors have not yet ventured to dispute. ‘We escape altogether,’ say these gentlemen, ‘the provisions of the Building Act relative to warehouses, as, by reason of our breaking bulk, our places of business are not mere storehouses.’ That this reading is a violation of the spirit of the statute there can be no doubt; that it is also a violation of its letter we also believe: if not, it is high time that the law be amended upon this point, for we affirm, on the very best authority, that London has never, since the great fire, been in such danger of an overwhelming conflagration as it is now by the presence and rapid spreading of these huge warehouses, filled with the elements of destruction, and placed side by side, as though for the very purpose of producing the utmost mischief by contagion.

Let us suppose, for instance, that a fire had once established itself in Cook’s warehouses; to extinguish it would be out of
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the question. Fire-engines would be perfectly useless against a body of flame which would speedily become like a blast-furnace, and burn with a white heat. Who knows what would come after? Supposing the wind to be blowing from the south, we tremble for the Cathedral. The huge dome is constructed entirely of oak, dried by the seasoning of 150 years, and the combustible framework is only lined on the exterior by sheet lead. It may be imagined that this would be protection enough against the enormous masses of burning cotton and linen cloth which would speedily be blown upon it, but Mr. Cottam not long since stated at the Institution of Civil Engineers that, 'when the Princess Theatre was on fire, part of his premises also caught; on examination he found that it arose from a piece of blazing wood being thrown over from the theatre, which, falling into the leaden gutter, had melted it, and the liquid metal passed through the ceiling on to a workman's bench where there was some oil, which it immediately set fire to.' The great dome would be in quite as much danger as Mr. Cottam's workshop. Engines would be useless at such a height even as the stone gallery—the place where large bodies of burning material would most likely make a lodgment. Irreparable as would be the disaster with which we are threatened in this direction, one quite as great lies in another. Eastward of Cook's warehouses, and in the neighbourhood of a vitriol or some other chemical manufactory, is situated Doctors' Commons, the repository of the great mass of English wills. The roofs of this pile of buildings* are continuous—the buildings themselves are nearly as dry as the law itself. If one portion of the structure were to catch fire, nothing could save the whole from destruction. It may be urged that the block of buildings, which commands, like a battery, two such important points in the metropolis, is after all fire-proof, and as far as danger from without is concerned, this is true enough; but as cotton bales are not fire-proof, it is an impossibility to insure safety from within. Iron columns in such instances melt before the white heat like sticks of sealing-wax; stone flies into a thousand pieces with the celerity of a Prince Rupert's drop; slate becomes transformed into a pumice light enough to float upon water; the iron girders and beams, by reason of their lateral expansion, thrust out the walls; and the very elements which seem calculated under ordinary circumstances to give an almost exhaustless durability to the structure, produce its most rapid destruction. The great fire at Messrs. Cubitt's

* The roof of the pile of buildings composing Somerset-House is also continuous, thereby greatly increasing the risk of the entire building, if one portion of it were to catch.

so-called fire-proof works at Pimlico is one of the latest proofs we have had of the entire fallacy of supposing stone and iron can withstand the action of a large body of fierce flame. We saw the other day portions of columns from this building fused as though they had been composed of so much pewter. Again, when the armoury at the Tower was destroyed, the barrels of the muskets were found reduced to the most fantastic shapes, and some of the largest pieces of ordnance were doubled up. A stronger instance still was exhibited at Davis's wharf in 1837, when a cast-iron pipe outside the building was melted like an icicle. But such a fierce furnace is not at all necessary to destroy cast-iron supports, as it appears from the experiments of Mr. Fairbairn that at a temperature of 600° the cohesive power of the metal rapidly decreases with every increment of heat. Mr. Braidwood, in his paper on fire-proof buildings read before the Institute of Civil Engineers on February 29th, 1849, was the first, we believe, to draw attention to this serious defect in a material used so extensively in modern buildings. Since that paper was read a case has come under his notice which clearly testifies to the truth of his position:—

‘A chapel in Liverpool-road, Islington, 70 feet in length and 52 feet in breadth, took fire in the cellar, on the 2nd October, 1848, and was completely burned down. After the fire it was ascertained that, of thirteen cast-iron pillars used to support the galleries, only two remained perfect; the greater part of the others were broken into small pieces, the metal appearing to have lost all power of cohesion, and some parts were melted, of which specimens are now shown. It should be observed that these pillars were of ample strength to support the galleries when filled by the congregation, but when the fire reached them they crumbled under the weight of the timber only, lightened as it must have been by the progress of the fire.’

But when we are considering the safety of Manchester warehouses, we are also considering the lives of the young men who are employed in them, and are in most cases located in the upper stories. In several of the wholesale warehouses in the City, as Mr. Braidwood informs us,

‘the cast-iron pillars are much less in proportion to the weight to be carried than those, referred to, and would be completely in the draught of a fire. If a fire should unfortunately take place under such circumstances, the loss of human life might be very great, as the chance of fifty, eighty, or one hundred people escaping, in the confusion of a sudden night alarm, by one or two ladders to the roof, could scarcely be calculated on, and the time such escape must necessarily occupy, independent of all chance of accidents, would be considerable.’

The application of water would only aggravate the difficulty, for, if it touched the red-hot iron, in all probability it would
cause

cause it to fracture and render it useless as a support. It is well known that furnace-bars are very speedily destroyed by a leakage of the boiler, the effect of the steam on the under side of the bars being to curve and twist them. To ensure a perfectly fire-proof building we must resort to one of two courses—either we must divide large warehouses into compartments by solid brick divisions, and thus confine any fire that should happen to break out within manageable limits, just as we save an iron ship from foundering, on account of a circumscribed fracture, by having her built in compartments; or we must resort to the old Roman plan of building—that is, support the floors upon brick piers and groined arches well laid in cement, for mortar will pulverise under a great heat. The former plan has the great advantage that it ensures the safety of the principal contents, as well as of the building itself. The new Record-Office in Fetter-lane is a perfect specimen of the kind, and is, perhaps, the only absolutely fire-proof structure in England, being constructed of iron and stone, and having no room larger than 17 feet by 25, and 17 feet high, with a cubical contents of only 8000 feet. None of the rooms open into each other, but into a vaulted passage by means of iron doors; and if the documents were to take fire in any one of them, they would burn out as innocuously to the rest of the building as coals in a grate.

It must not be supposed that we disparage altogether the use of iron and stone in the erection of warehouses, even where they are built on the ordinary plan; for the outside structure they are invaluable, and render it safe from most extraneous danger. No better proof of this could be given than the experience of Liverpool, whose fires during the last half-century have been on the most gigantic scale. The larger bonded and other warehouses were generally built with continuous roofs, and with wooden doors and pent-houses to the different stories, which always kindled when there was a fire on the opposite side of the narrow streets in which they were ordinarily placed. To such a lamentable extent had conflagrations increased about the year 1841, that the rate of insurance, which had been eight shillings per cent., ran up to thirty-six shillings. This was about the time of the Formby-street fire, when 379,000*l.* worth of property was destroyed, and the total losses from the beginning of the century had not been less than three millions and a quarter sterling. The magnitude of the evil called for a corresponding remedy. A Bill was obtained in 1843 for the amendment of the Building Act; party-walls were run up five feet high between each warehouse, doors and pent-houses were constructed of iron, the cubical contents of the buildings themselves were limited, &c.;
and

and the effect of these improvements was so to diminish the risk that insurances fell to their normal rate. It cannot be said, however, that Liverpool has yet purged herself of the calamity of fire.

In ordinary dwellings and in public offices the use of iron and stone, again, cannot be too much commended; in such buildings the rooms are comparatively small, and their contents are not sufficiently inflammable either in quantity or quality to injure these materials. A marked diminution in the number of fires in the Metropolis may be expected, from the almost universal use of iron and stone in new structures of this kind. The houses in Victoria-street, Westminster, built upon the 'flat' system, are, we should say, entirely fireproof, as the floors are either vaulted or filled in with concrete, which will not allow the passage of fire. Nearly all Paris is built in this manner, and hence its freedom from large conflagrations.* Were it not for this, no city would be more likely to suffer, as the houses are very high, and the supply of water extremely bad. To Londoners it seems little better than a farce to watch the *sapeurs-pompiers* hurrying to a fire with an engine not much bigger than a garden squirt, followed by a water-barrel—resources which are found sufficient to cope with the enemy, confined as it is within such narrow limits.

Without going to the expense of stone and iron, we might, by taking a hint from the Parisians, make the rooms of our private houses fireproof, by abandoning the absurd custom of separating rooms by hollow wooden floors and hollow wooden partitions thinly coated with plaster—a method which has the effect of circulating the fire from the bottom to the top of the house in the quickest possible space of time. If a fire breaks out in a room, the ceiling will, it is true, stop the flames for a considerable time; but the hollow partitions full of air act as conductors, and the firemen have often found that the flames have spread from a lower to an upper apartment by this secret channel, without injuring the intermediate rooms, and without even its progress being suspected. As we understand that the Building Act is to be amended this session, we trust Sir William Molesworth will extend the clause relating to party walls to rooms as well as to houses. The expense need be but trifling, as will be seen by consulting the little work of Mr. Hosking, who was the first, we believe, to instruct the English public in the admirable methods of the Parisian builders. Instead of using

* In Nottingham, where they have gypsum in the neighbourhood as they have in Paris, they form their floors and partitions in the same solid manner, and the consequence is that a building is rarely burned down in that town.

flimsy laths for their partitions, they employ stout oaken pieces of wood, as thick as garden palings; these they nail firmly on each side of the framing of the partition, fill the space between with rubble and plaster of Paris, and thickly coat the whole of the wall with the latter. The floors are managed in the same manner, as well as the under side of the stairs, which are thus rendered almost as fire-proof as a stone flight. Very many lives would be saved in Great Britain if this simple expedient were adopted by our builders, instead of making the stairs of ill-fitted wood, full of air-crevices, and covering their under side with a thin film of plaster; for fire always makes for the stairs, which form the funnel of the house; and hence the necessity for rendering them as secure as possible, in order to provide a line of retreat for the inmates.

We have said that London is growing upwards to the sky—no house in any valuable portion of the Metropolis being now rebuilt without the addition of at least one story. Eighty and ninety feet is getting a common height for our great offices and warehouses, which is tantamount to saying that a certain portion of the Metropolis, and that a constantly increasing one, is outgrowing the power of the Fire Brigade, as no engine built upon the present plan can throw water for many minutes to such an elevation. Mr. Braidwood foresees that he must call in the aid of the common drudge steam. In America they have already introduced this new agent with some success, and in London we have proved its power in the floating-engine. Steam fire-engines, it is evident, will soon be brought into use, unless we do away with the necessity for engines at all by fixing the hose directly on the mains, as is done at Hamburg. But to effect this it will be necessary to relay the whole Metropolis with much larger pipes, to increase their number, and at the same time adopt the constant-service system. At present, even if we had the water always on, the mains are often so small as to preclude the use of more than two or three hose—for, if the collective diameters of the areas of the latter exceed that of the pipe which feeds them, the pressure will cease, and no water will be propelled to any height through the jet. It cannot be denied, however, that if the streets of London were all supplied with capacious mains, and the different companies plugged them profusely (a thing they are very chary of doing, for fear of their being injured by the wear and tear of the fire-engines), London would be rendered far more secure than it is at present, as scarcely any fire could withstand the full force of constant streams of thousands of gallons of water per minute. At present the greater portion of the water is wasted; at the destruction of the Houses of Parliament,

ment, a body of this element equal to an acre in area, and twelve feet deep, flowed from the mains, a tenth part of which could not have been used by the twenty-three jets that were playing simultaneously.

It will not here be out of place to say a few words upon the method of extinguishing flame by means of the gaseous mixture contained in Phillips's fire-annihilators. According to a writer in the 'Household Words,' the ordinary sized annihilator is less than that of a small upright iron coalscuttle, and its weight not greater than can be easily carried by man or woman to any part of the house. It is charged with a compound of charcoal, nitre, and gypsum, moulded into the form of a large brick: the igniter is a glass tube inserted into the top of this brick: enclosing two phials—one filled with the mixture of chlorate of potassa and sugar, the other containing a few drops of sulphuric acid. A slight blow upon a knob drives down a pin which breaks the phials, and the different mixtures coming in contact ignite the mass, the gas arising from which, acting upon a water-chamber contained in the machine, produces a steam, and the whole escapes forth in a dense, expanding cloud.

Mr. Phillips made some public experiments with his fire-annihilator three or four years ago, in which its power to put out the fiercest flame was fully proved. The timber framework of a three-storied house smeared with pitch and tar, upon being fired, was instantly extinguished: quantities of pitch, tar, and oil of turpentine, which only burn the stronger for the presence of water, were dealt with still more expeditiously. The valuable quality of rendering an atmosphere of dense smoke, in which no living thing could exist, perfectly respirable, was also shown in the most satisfactory manner. Since that time the machine has been brought into action at Leeds, where it put out a fire in an attic; and in a very serious conflagration, which took place in the spirit-room, and afterwards extended to the main hatchway of the mail steamer, the *City of Manchester*, in the autumn of 1852, it was applied with the most perfect success. There can be no doubt that in all confined places the control of the annihilator over flame is omnipotent—acting much more speedily than water, and, unlike that element, doing no damage. When the flames are unconfined, the annihilator will prove of little use, because, the gaseous cloud that issues from it not being heavier than the air, it cannot be projected to any distance. As an auxiliary to the engine, it will be invaluable in many cases, as it will enable the fireman to go into places where at present he dares not enter, unless protected by the unwieldy smoke-jacket, the supply of air to which might at any time be cut off

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by rubbish falling upon the hose through which it is pumped to him by the engine.

Although it is foreign to our design to speak at length of agricultural fires, and incendiarism among farming stock, the subject is too important to be entirely omitted. One of the largest London insurance-offices, interested in farming stock, posts up bills about premises they have insured, which, after stating that no lucifers are to be used, or pipes are to be smoked, goes on to say, '*This farm is insured; the fire office will be the only sufferer in the event of a fire.*' The inference is, that the labourer will feel more inclined to pay respect to the property of an insurance company than to that of the farmer. Yet it is far from being the case that the crime is always prompted by personal ill-will. One of the largest agricultural incendiaries upon record was a city weaver, who acted from a general spirit of discontent, without any hatred or knowledge of the owners. In other instances the sole motive is the 'jollification' which generally follows a fire upon a farm: this fact came to light at a trial in Cambridge eight or nine years since, when a man who was sentenced to death for setting fire to a home-stead confessed to having caused twelve different fires, his only object being the desire to obtain the few shillings, and the refreshment of bread, cheese, and ale, which are given to labourers on these occasions. On the other hand, if the farmer determines to give no recompense, the hangers-on have been known to put their hands in their pockets and watch his property burn with the utmost indifference, if not with glee.

The causes of fire which the farmer has mainly to guard against may be at once seen by the following table, for which we are indebted to the manager of the County Fire Office:—

Losses on Farming Stock between January the 1st and November the 30th, 1853.

Number of Fires.	Cause.	Amount.		
		£.	s.	d.
49	Incendiary	5214	6	11
17	Lightning	181	5	10
22	Children and others playing with lucifers	1211	18	10
2	Steam thrashing-machines	430	0	0
38	General	1781	10	9
128		8819	11	4

These losses are upon a total insurance of eight millions. Incendiarism and children playing with lucifers are the two grand

grand elements of destruction; and the former, we are given to understand, is below the general average. Kind treatment and better education are the only shields that can protect the farmer against incendiarism. The nuisance arising from children playing with lucifers may be abated by the absolute denial of matches to young boys about a farm, who, to cook their dinners, generally cause conflagrations near the ricks in the winter, and among the standing corn whilst 'keeping birds' in the summer. The following excellent suggestions are by Mr. Beaumont, the secretary of the County Fire Office.

'Precautions to be taken against a Fire.'

Forbid your men to use lucifer matches, smoke or light pipes or cigars, destroy wasps' nests, or fire off guns, in or near the rick-yard, or to throw hot cinders into or against any wooden out-building on the farm, on pain of instant dismissal.

Place your ricks in a single line, and as far distant from each other as you conveniently can.

Place hay-ricks and corn-stacks *alternately*; the hay-rick will check the progress of the fire.

Keep the rickyard, and especially the spaces between the stacks and ricks, clear of all loose straw; and in all respects in a neat and clean state. The loose straw is more frequently the means of firing, than the stack itself.

Have a pond close to the rickyard, although there may be but a bad supply of water.

When a steam thrashing-machine is to be used, place it *on the lee side* of the stack or barn, so that the wind may blow the sparks *away from* the stacks. Let the engine be placed as far from the machine as the length of the strap will allow. Have the loose straw continually cleared away from the engine; see that two or three pails of water are kept constantly close to the ash-pan, and that the pan itself is kept constantly full of water.

How to act when a Fire has broken out in a Rickyard.

Do not wait for the engines, nor for the assistance of the labourers from a distance. Depend entirely upon the immediate and energetic exertions of yourself and your own men.

Do not allow the rick or stack on fire to be disturbed—let it burn itself out—but let every exertion be made to press it compactly together, and, as far as is practicable, prevent any lighted particles flying about.

Get together all your blankets, carpets, sacks, rugs, and other similar articles, soak them thoroughly in water, and place them over and against the adjoining ricks and stacks, towards which the wind blows.

Having thus covered the sides of the ricks adjoining that on fire, devote all your attention to the latter. Press it together by every

available means. If water is at hand, throw upon it as much as possible.

If engines arrive, let the water be thrown upon the blankets, &c., covering the adjoining stacks, and then upon the stack on fire.

Among the numerous hands who flock to assist upon these occasions, many do mischief by their want of knowledge, and especially by opening the fired stack and scattering the embers. In order to obviate this evil, place your best man in command over the stack on fire, desire him to make it *his sole duty* to prevent it being disturbed, and to keep it pressed and watered.

Place other men, in whose steadiness you have confidence, to watch the adjoining ricks, to keep the coverings over them, and to extinguish any embers flying from the stack on fire. In order to effect this it is most desirable that there should be ladders at hand to enable one or two of the labourers to mount upon each stack.

If the ricks are separated from each other, and there is no danger of the fire extending to a second, it is of course desirable to save as much of the one on fire as may be possible. That however is not unfrequently accomplished by keeping the rick compactly together rather than by opening it.

Send for all the neighbours' blankets and tarpaulins: these are invaluable, they are near at hand, and can be immediately applied.'

The companies are always very willing to pay for any damage done in attempting to save their property.

The business of the Fire Brigade is to protect property and not life from fire, though the men of course use every exertion to save the inmates, and are always provided with 'a jumping-sheet' to catch those who precipitate themselves from the roofs and windows of houses. As the danger to life generally arises at a very early stage of a fire, when the freshly aroused inhabitants fly distracted into very dangerous places, and often destroy themselves by needless haste, it is highly necessary to have help at hand before the engines can possibly arrive. There are, it is true, ladders placed against all parish churches, but they are always locked up, often rotten, and never in charge of trained individuals: accordingly they may be classed for inefficiency with the parish engines. A proof of this was given at the calamitous fire which occurred in Dover Street, at Raggett's Hotel, on which occasion Mrs. Round and several other persons were lost through the conduct of the keeper of one of the fire-escapes of the parish of St. James being absent when called, and drunk when, upon his arrival, he attempted to put his machine in action: the keeper of a second escape belonging to this parish, and stationed in Golden Square, refused to go to a fire in Soho, which occurred in 1852, because it was out of his district; the
consequence

consequence was that seven persons threw themselves from the windows, and were all more or less dangerously injured.

In 1833 the Royal Society for the Protection of Life from Fire, which had been imperfectly organised a year or two before, was fully established, and has continued to increase the sphere of its influence year by year. The committee of management, appreciating the value of celerity in attending fires, have marked the Metropolis out into fifty-five squares of half a mile each: in forty-two of these they have established a station,* in its most central part, at which a fire-escape and trained conductor are to be found from 9 P.M. to 6 A.M. from Lady-day to Michaelmas, and from 8 P.M. to 7 A.M. from Michaelmas to Lady-day. When the remaining thirteen squares are furnished there will be means of rescue from fire within a quarter of a mile of every house in London: thus the nightly watch for this purpose is better organized with respect to number of stations than even the Fire Brigade, and like this force it is under the general management of a single director. We are all familiar with the sight of these strange-looking machines as they come towering along in the dusk of the evening towards their appointed stations, but few perhaps have seen them in action or have examined the manner in which they are constructed. There are several methods of building them, but the one chiefly used is Wivell's, a very simple machine and speedily put in action, a description of which we take from the Society's Report:—

† The following are the stations of the fire-escapes:—

Western District.—1. Edgeware-road, near Cambridge-terrace; 2. Baker-street, corner of King-street; 3. Great Portland-street, by the chapel; 4. New Road, corner of Albany-street; 5. New Road, Euston-square, in front of St. Pancras Church; 6. Camden Town, in front of 'The Southampton Arms'; 7. Battle-bridge, King's-cross; 8. Guildford-street, Foundling-hospital; 9. Bedford-row, south end; 10. Hart-street, Bloomsbury, by St. George's Church; 11. Tottenham-court-road, by the chapel; 12. Oxford-street, corner of Dean-street, Soho; 13. Oxford-street, corner of Marylebone-lane; 14. Oxford-street west, corner of Connaught-place; 15. South Audley-street, by the chapel; 16. Brompton, near Knightsbridge-green; 17. Eaton-square, by St. Peter's Church; 18. Westminster, No. 1, Broad Sanctuary; 19. Westminster, No. 2, Horseferry-road; 20. West Strand, Trafalgar-square, by St. Martin's Church; 21. Strand, by St. Clement's Church.

Eastern District.—22. New Bridge-street, by the Obelisk; 23. Holborn-hill, corner of Hatton-garden; 24. Aldersgate-street, opposite Carthusian-street; 25. Clerkenwell, St. John-street, opposite Corporation-row; 26. Islington, No. 1, on the Green; 27. Islington, No. 2, Compton-terrace, Highbury end; 28. Old-street, St. Luke's, corner of Bath-street; 29. Shoreditch, in front of the church; 30. Bishopsgate-street, near Widegate-street; 31. Whitechapel, High-street, in front of the church; 32. Aldgate, corner of Leadenhall-street and Fenchurch-street; 33. The Royal Exchange, by the Wellington Statue; 34. Cheapside, by the Western Obelisk; 35. Southwark, in front of St. George's Church; 36. Newington, Obelisk, facing 'The Elephant and Castle'; 37. Kennington-cross; 38. Lambeth, by the Female Orphan Asylum; 39. Blackfriars'-road, corner of Great Charlotte-street; 40. Finsbury-circus, corner of West-street; 41. St. Mary-at-Hill, corner of Rood-lane; 42. Conduit-street, corner of Great George-street.

'The

'The main ladder reaches from thirty to thirty-five feet, and can instantly be applied to most second-floor windows by means of the carriage lever. The upper ladder folds over the main ladder, and is raised easily in the position represented, by a rope attached to its lever irons on either side of the main ladder; or, as recently adopted in one or two of the Escapes, by an arrangement of pulleys in lieu of the lever irons. The short ladder, for first floors, fits in under the carriage, and is often of the greatest service. Under the whole length of the main ladder is a canvas trough or bagging, made of stout sailcloth, protected by an outer trough of copper wire net, leaving sufficient room between for the yielding of the canvas in a person's descent. The addition of the copper wire is a great improvement, as, although not affording an entire protection against the canvas burning, it in most cases avails, and prevents the possibility of any one falling through. The soaking of the canvas in alum and other solutions is also attended to; but this, while preventing its flaming, cannot avoid the risk of accident from the fire charring the canvas.'

When we remember that the fire-escapes often have to be raised above windows from which the flames are pouring forth, it will be seen how valuable is this double protection against the destruction of the canvas. The necessity for it was shown at a fire in Crawford Street, Marylebone, where an explosion took place which fired the canvas and let the conductor fall through, just as he was rescuing an inmate,—an accident by which he was dreadfully injured. When people look up at these fire-escapes they generally shudder at the idea of having to enter the bag, suspended at a height of forty feet from the ground, but in the hour of danger the terrified inmates never exhibit the slightest reluctance. Once in, they slide down the bulging canvas in the gentlest manner, without any of the rapidity that would be imagined from the almost perpendicular position in which it hangs.

The fire-escape which is stationed near the New Road is constructed so that it can be taken off its wheels, in order to allow it to enter the long gardens which here extend before so many of the houses. The height attainable by these escapes varies from 43½ feet to 45 feet. A supplemental short ladder is now carried by most of them, which can be quickly fitted on an emergency into the upper ladder, and increases the height to 50 feet.

The intrepidity of the conductors of these machines is quite astonishing. Familiarity with danger begets a coolness which enables them to place themselves in positions which would prove destructive to unpractised persons. As in most cases they are the prominent actors in a drama witnessed by a whole street full of excited spectators, they are perhaps tempted by the cheers to risk themselves in a manner they would little dream of doing under

under other circumstances. In addition to such a stimulus they are rewarded with a silver medal, and with sums of money, for any extraordinary act of gallantry. Every instance of a daring rescue is entered in the Society's books, from which we have extracted a few examples, to show what enterprising fellows they are. At a fire which broke out in November, 1844, in a house in Hatton-garden, Conductor Sunshine on his arrival found the following state of things. On the second floor a man was sitting on the sill of one of the windows (there were four windows abreast), and on the third floor a man was hanging by his hands to the window-sill at the other extremity of the house-front. After having rescued the man on the second floor, he did not dare to raise his third-floor ladder, for fear of hitting the hanging man's hands, and causing him to fall; accordingly, he stood upon the top rung of the second-floor ladder, and by so doing could just touch with his upstrained arms the poor fellow's depending feet. In this position, having himself but a precarious hold of the window-frame beneath, his only footing being the topmost rung, he called to the man to drop when he told him, and discovered from his silence that he was deaf and dumb. Upon being tapped upon the foot, however, he let go, and the conductor managed, incredible as it may appear, to slip him down between himself and the wall on to the top of the ladder, and brought him safely to the ground. In the next case, Conductor Chapman was the hero of the scene, although the indomitable Sunshine was present. Having crossed the roofs of two adjoining out-buildings, Chapman managed to place his ladder against the second back floor of the house on fire. Having rescued a lady, he was obliged to retrace his steps over the roofs, as the fire was coming through the tiling. He could only cross by making a bridge of the short ladder; and scarcely had they cleared the premises when it fell in with a tremendous crash.

On another occasion this intrepid man having made an entrance into the second-floor window of a house in Tottenham-court-road, he was obliged to retreat twice, by reason of his lamp going out in the dense smoke. On the third trial it remained in, and enabled him to search the place. 'I called out loud,' he says in his report, 'and was answered by a kind of stifled cry. I rushed across the landing to the back room, and encountered a man, who groaned out, "O save my wife!" I groped about, and laid hold of a female, who fell with me, clasping two children in her arms. I took them up, and brought them to the escape, guiding the man to follow me, and placed them all safely in the canvas, from whence they reached the ground without any injury; and, finally, I came down myself, quite exhausted.' 'We thought,' said

said a bystander, 'when he jumped into the second-floor window, that we should not see him again alive; and I cannot tell you how he was cheered when he appeared with the woman and her two children.'

We shall content ourselves by quoting one more exploit from the Reports of the Society, the hero of which was Conductor Wood, who received a testimonial on vellum for the following service at a fire in Colchester Street, Whitechapel, on the 29th of April, 1854:—

'On his arrival the fire was raging throughout the back of the house, and smoke issuing from every window; upon entering the first-floor room, part of which was on fire, he discovered five persons almost insensible from the excessive heat: he immediately descended the ladder *with a woman on his shoulders, and holding a child by its night-clothes in his mouth*; again ascended, re-entered the room, and having enabled the father to escape, had scarcely descended, *with a child under each arm*, when the whole building became enveloped in flames, rendering it impossible to attempt a rescue of the remainder of the unfortunate inmates.'

The rewards of the Society are not always won by their own men. William Trafford, police constable 344, for instance, had one of the Society's medals presented to him,* for 'allowing two persons to drop upon him from the top windows of a house in College Street, Camden-town, and thereby enabling them to escape without material injury.' Nothing is said as to the damage done to poor Trafford by this act of self-devotion.

The real working value of the fire-escapes may be judged from the fact that, during the twenty years they have been on duty, they have attended no less than 2041 fires, and rescued 214 human beings from destruction. To make this excellent scheme complete, only thirteen stations have now to be established, at a first cost of about eighty pounds each; the charitable could not give their money in a more worthy cause than in furnishing these districts, in which many thousands of inhabitants are still exposed to the most horrible of all deaths. To show that the usefulness of the Society has progressed with the number of their escapes, we need only adduce the evidence of the table in the next page, made up to the 25th of March of each year.

The fire-escapes, in addition to their own particular duty, are also of the greatest service to the firemen of the Brigade, as, by the use of their ladders, they are enabled to ascend to any window of a house, and to direct the jet directly upon the burning mass, instead of throwing it wild,—a matter of the greatest importance in extinguishing a fire: for unless you play upon the
burning

burning material, and thus cut off the flame at its root, you only uselessly deluge the building with water, which is, we believe, in many cases quite as destructive to stock and furniture as the fire it is intended to extinguish.

Year.	Number of Stations.	Fires attended.	Lives saved.
1845	8 increased to 11	116	13
1846	11 „ 15	96	7
1847	15 „ 21	139	11
1848	21 „ 25	197	17
1849	25 „ 26	223	31
1850	26 „ 28	198	10
1851	28 „ 30	226	36
1852	30 „ 34	253	25
1853	34 „ 40	265	46
1854	40 „ 40 Two since added.	328	28

Much may be done by the inmates to help themselves when a house is on fire, in case neither the engine nor the escape should arrive in time to assist them. Mr. Braidwood, in his little work on the method of proceeding at fires, advises his readers to rehearse to themselves his recommendations, otherwise when the danger comes they are thrown, according to his experience, into ‘a state of temporary derangement, and seem to be actuated only by a desire of muscular movement,’ throwing chairs and tables from the tops of houses that are scarcely on fire, and, to wind up the absurdity, he says, ‘on one occasion I saw crockery-ware thrown from a window on the third floor.’

The means to be adopted to prevent the flames spreading, resolve themselves into taking care not to open doors or windows, which create a draught. The same rule should be observed by those outside; no door or glass should be smashed in before the means are at hand to put out the fire.

Directions for aiding persons to escape from premises on fire.

1. Be careful to acquaint yourself with the best means of exit from the house both at the top and bottom.

2. On the first alarm reflect before you act. If in bed at the time wrap yourself in a blanket, or bedside carpet; open no more doors or windows than are absolutely necessary, and shut every door after you.

3. There is always from eight to twelve inches of pure air close to the ground: if you cannot therefore walk upright through the smoke, drop on your hands and knees, and thus progress. A wetted silk handkerchief, a piece of flannel, or a worsted stocking drawn over the face permits breathing, and, to a great extent, excludes the smoke.

4. If you can neither make your way upwards nor downwards, get into

into a front room : if there is a family, see that they are all collected here, and keep the door closed as much as possible, for remember that smoke always follows a draught, and fire always rushes after smoke.

5. On no account throw yourself, or allow others to throw themselves, from the window. If no assistance is at hand, and you are in extremity, tie the sheets together, and, having fastened one end to some heavy piece of furniture, let down the women and children one by one, by tying the end of the line of sheets round the waist and lowering them through the window that is over the door, rather than through one that is over the area. You can easily let yourself down when the helpless are saved.

6. If a woman's clothes should catch fire, let her instantly roll herself over and over on the ground ; if a man be present, let him throw her down and do the like, and then wrap her in a rug, coat, or the first *woollen* thing that is at hand.

7. Bystanders, the instant they see a fire, should run for the fire-escape, or to the police station if that is nearer, where a ' jumping-sheet ' is always to be found.

Dancers, and those that are accustomed to wear light muslins and other inflammable articles of clothing, when they are likely to come in contact with the gas, would do well to remember, that by steeping them in a solution of alum they would not be liable to catch fire. If the rule were enforced at theatres, we might avoid any possible recurrence of such a catastrophe as happened at Drury Lane in 1844, when poor Clara Webster was so burnt before the eyes of the audience, that she died in a few days.

During the twenty-one years that the Brigade has been in existence the firemen have been called out needlessly no less than 1695 times, often indeed mischievously ; for there are some idle people who think it amusing to send the men and engines miles away to imaginary fires. In most cases, however, these false alarms have originated in the over anxiety of persons, who have hastened to the station for assistance, deceived by lights which they fancied to be of a suspicious character. Nature herself now and then gives a false alarm, and puts the Brigade to infinite trouble by her vagaries. Not only the men at one station, but nearly half of the entire force, were employed in November, 1835, from 11 P.M. to 6 A.M. on the succeeding morning, in running after the *aurora borealis*. Some of the dozen engines out on that occasion reached as far as Kilburn and Hampstead in search of those evanescent lights, which exactly simulated extensive fires. In the succeeding year the red rays of the rising sun took in some credulous members of the Brigade, and led them with their engines full swing along the Commercial and Mile-End Roads. Whilst on this false scent they

came

came upon a real fire, which, although inferior to great Sol himself in grandeur, was far more remunerative, as the God of Morning knows nothing about rewards to first, second, and third engines.

The most remarkable and universal false alarm caused by the play of the Northern lights was in the autumn of this same year, when the whole north-eastern horizon seemed possessed by an angry conflagration, from which huge clouds of smoke appeared to roll away. On this occasion the public, as well as the firemen, were deceived: crowds poured forth from the West-end on foot and in carriages to see what they imagined to be a grand effect of the 'devouring element;' and thirteen engines turned out with the full impression that a whole suburb of the metropolis was in flames.

The alarms from chimneys on fire have called the engines out no less than 1982 times during the years the Brigade has been established, or on an average twice a-week. Let us hope that, as we are setting about clearing the atmosphere by Act of Parliament, accidents of this kind will gradually cease. We may now watch with satisfaction many a tall shaft, as we steam down the river, that seems to stand idle in the air; the great rolling clouds of smoke that used to obscure the sky on the southern bank of the Thames are no longer seen, and the air is growing appreciably purer. It is evident that our manufacturers, where they have not become alive to the saving it would effect, have been coerced by the vigorous manner in which the Home Secretary has put the law in force against these black offenders; and we may hope that Dr. Arnott's smoke-consuming grate, or some modification of it, will ere long find its way into every house to complete the work.

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- ART. II.—1. *Memoirs of the Life and Scientific Researches of John Dalton, Hon. D.C.L. Oxford, LL.D. Edinburgh, F.R.S., Foreign Associate of the Academy of Sciences, Paris, &c.* By William Charles Henry, M.D., F.R.S. 8vo. London, 1854.
2. *An Introduction to the Atomic Theory.* By Charles Daubeny, M.D., F.R.S. &c., Professor of Chemistry and of Botany in the University of Oxford. 2nd Edition. Oxford. 1851.

WE place these volumes in conjunction—the first a biography, the second an essay on one of the highest topics of natural science—because the fame of Dalton mainly rests on the discoveries by which he defined and illustrated that theory which forms the subject of Dr. Daubeny's work. A dedication
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of this second edition to the memory of Dalton—then recently deceased—justly and very eloquently describes those researches in atomic chemistry, which, while wonderfully enlarging the domains of the science, and giving exactitude to all its conclusions, have led to new and more profound views of the great laws by which matter is governed in the mutual actions and combinations of its ultimate component parts. Here, on this wide field of atomical theory, the bold speculations of ancient philosophy had anticipated, as we shall presently see, some of the results, now better fixed by actual experiment and the consummate refinements of modern analysis. Dalton had no knowledge of these elder hypotheses, nor even a full anticipation of all that his doctrine was to bring forth in the future. But it was he who in effect sowed the seeds for this great harvest; and though others had recently trodden on the same ground, and to the very brink of the discovery, it was he who first fully indicated the principle and method of research, and the true import and value of the facts derived from it.

The name of Dalton must therefore enter into every history of the atomical theory; and we may be excused for dwelling upon some particulars of the life of this remarkable person, as afforded us in the volume of Dr. Henry, aided by our own personal recollections. Dr. Henry was peculiarly fitted for his task. He inherited from his father a strong personal attachment to Dalton, whose reciprocal regard was shown by his bequest to Dr. Henry of his papers and all his philosophical apparatus. Thoroughly versed in modern chemistry himself, and especially familiar, from study in the German laboratories, with those researches which have so greatly enlarged, while in some parts modifying, the original discovery of Dalton, he comes well prepared to narrate the progress and present state of this great inquiry. He is everywhere perfectly candid in his estimate of persons and things, where points of controversy are concerned. And further, his volume is very agreeably written, and will please all those who, with some knowledge of natural science, can find interest in the simple memorial of an earnest investigator of its truths.

Apart indeed from his scientific career, it would be difficult to conceive a life more calm and uneventful than that of Dalton. What Cuvier said of Cavendish is equally true of him—‘Il n’y a dans son histoire d’autres incidens que des découvertes.’ Born in a humble position, from which he only slowly emerged—living successively in two provincial towns, where few at that time could understand or appreciate his labours—working always alone, with no other excitement than the love of physical truth
—wanting

—wanting little, and undisturbed by the passions or even by the more common emotions of social existence—his course was one of patient study, unbroken by any of the sterner incidents of life. He was a Quaker by birth, and maintained to the end the dress and many of the usages of the sect. But his character and habits depended much less on this than on his individual temperament, and those intellectual peculiarities of which we shall have afterwards to speak.

John Dalton was born at Eaglesfield, a village near Cocker-mouth, in 1766. The Daltons were of the class of small proprietors, formerly called *statesmen*,—a name that still lingers, we believe, in the northern parts of England. The father of John appears to have been a weaver, as well as yeoman; but of slender means in both capacities. He had two sons and a daughter. John, the second son, was placed at the village schools at Eaglesfield and in the neighbourhood; but derived much more aid from the talents with which he was born, than from any help which schools could give. He speedily nurtured his own faculties into activity; and the slight memorials of his youth are the miniature of the man in later life. This miniature becomes more exact as we follow him forward to his early positions in the world; first, as a schoolmaster himself at Eaglesfield, when only twelve years old—next, as assistant and principal successively, at a boarding school at Kendal. Simple as were, and still are, the functions of a village schoolmaster, it is extraordinary that a boy of twelve years should be able to fulfil them; and that, after a year of intermediate labour in husbandry, he should be called, when yet but fifteen, to the larger duties of the Kendal school. That inborn faculty of silent self-labour, and patient study, which remained with him through life, can alone explain this.

Some of the moral peculiarities of Dalton's character come out curiously in this part of his career, as delineated by the recollections of one or two persons yet living, who were his scholars at Kendal. Apart indeed from such information, we could readily have conjectured that he must have made a very indifferent schoolmaster. His own early self-acquired knowledge did not give him the power of instilling the same into others of his age. At no period had he any command of language or facility of explanation. Equally was he unfitted to comprehend those mental diversities of temper as well as intellect, which show themselves in the very dawn of life. Whether that uniformity of plan, which is in some sort inevitable in the gathering together of youth in schools and colleges, be not on the whole better in result than the teaching upon vague views of individual character, is a question we cannot here discuss. It is enough to say that Dalton,

as a schoolmaster, could have had but one method, and that founded on his own peculiar temperament and habits.

At the Kendal school, where there were some sixty boys and girls, educated at from half-a-guinea to fifteen shillings a quarter, he was associated, while master, with his brother Jonathan; a hard and severe man by nature. The surviving pupils describe John as of gentler temper; but nevertheless cold, abstracted, and uncouth in his ways. The school, at best, seems never to have been very popular under the management of these young brothers.

While residing at Kendal John Dalton engaged himself in frequent contributions to the 'Gentlemen's and Ladies' Diaries;' two periodical works which, at that time of scanty literature in the country parts of England, earned repute and circulation by their prize questions in mathematics and general philosophy. When Westmoreland was some days' journey from London, instead of the eight hours of present travel, such periodicals, with a weekly newspaper circulated among neighbours, were probably treasured more than the cumbrous superfluity of publications now spread throughout every corner of the kingdom. In 1787, we find that Dalton, being then twenty-one, correctly solved thirteen out of fifteen mathematical questions in these Diaries, and in 1790 gained the highest prize for his 'masterly solution of the prize question.' He meddled a little also with the moral queries propounded in these works; and his answers, though somewhat formal and vapid, are at least as good as the questions deserve.

Dalton began his career of physical research while at Kendal, directing it chiefly to Meteorology—a subject which engaged much of his attention through life. The first entry in his Meteorological Journal is of March 24, 1787, and records a remarkable Aurora Borealis on the evening of that day. Perchance from this very cause the phenomenon of the aurora (even now imperfectly explained) continued ever after to be a favourite topic with him. He made in the beginning his own barometer and thermometer; and used as an hygrometer some six yards of whipcord, suspended from a nail and stretched by a weight, with a scale attached to it. This rudeness of his instruments was not limited to early life. Even in the experiments which led to his great discoveries, his apparatus was grievously deficient in all those refinements which chemistry now requires and has obtained; and his laboratory, which we once visited, might well, in its slovenly arrangements, provoke a smile from the modern adept in analysis. There was a sort of obstinacy in Dalton's mind on this subject; derived in part from the inde-
pendence

pendence of his own early labours—in part also from an original pertinacity of his nature. But some compensation was found for this defect in his clear perception of the objects sought for, and in that patient repetition of experiments and observations which reconciles discordant results, and gives certainty to the conclusions obtained. The *Method of Averages*, even where not recognised as such, involves a principle prolific of truth; and Dalton largely availed himself of it in his scientific labours.

In May 1792 he first visited London, of which he says in a letter to his brother, ‘It is a most surprising place, and well worth one’s while to see once; but the most disagreeable place on earth for one of a contemplative turn to reside in constantly.’ A longer knowledge might, perhaps, have told him that a man may be alone in a multitude; and that the greatest works of contemplation as well as of practical activity have emerged from amidst the din and bustle of this great metropolis. It is a characteristic trait of him, that he occupied himself while going to the Friends’ Meeting House in counting the number of carriages he met on the road. ‘This,’ he says, ‘I executed with tolerable precision, and the number was 104.’ Dalton lived, in truth, in an atmosphere of numbers; and all his thoughts and observations took their colouring from this strong propensity of his nature.

In 1793 he first published his *Meteorological Observations and Essays*, in which he records his obligations to Mr. John Gough of Kendal; that singular man, who, becoming totally blind from small-pox when two years old, furnished a memorable instance of what the intellect can attain, unaided by this one great sense. Profoundly versed in mathematics, he became familiar also with every branch of natural philosophy; and had so cultivated his remaining senses, that he could tell by touch, smell, or taste, almost every plant within twenty miles of his native place. Dalton’s friendship for him continued throughout the whole of Mr. Gough’s long life.

It was in the same year, 1793, that Dalton made his second and final change of residence, by accepting the place of mathematical tutor at a College of Protestant Dissenters lately established in Manchester. Though his connexions with the College ceased after six years, he remained at Manchester during the rest of his life, and in the same house for the last thirty years of that time; making an income, which sufficed for his few and simple wants, by giving lessons to pupils, or occasional lectures, both at a very low rate of remuneration.

We suppose that few men of tolerable education have passed through life without putting together some lines, which either were poetry, or were believed by themselves to be such. Among
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the exceptions to the rule we should fully have expected Dalton to be one. But it was otherwise. His biographer gives us, as the best among other specimens, ten or twelve stanzas, addressed to an Æolian lyre; and written in 1796, at a time when his feelings seem to have been somewhat excited by the beauty and talents of a young Quaker lady, whose family he occasionally visited at Lancaster. In letters to his brother, from which extracts are given, he describes these qualities with more warmth and in greater detail than we should have expected; yet still with a certain philosophical method and a strong leaning to the '*tabular form*,' which delineates the man almost as well as the lady whom he admires. With regard to the verses, they surprise us from being very much in the Della Crusca style; and as poetry we can hardly commend them. Yet we give a stanza below, which will not be thought deficient either in harmony or feeling. In reading it we have a difficulty in recognising either the Quaker or the hard dry mathematician of the Kendal-school.*

Whatever was the state of Dalton's feelings at this time, result there was none. The same condition of life continued; one which probably made marriage impossible, even had he not been already wedded to those very different pursuits which gave happiness as well as honour to his life. It was about this year, 1796, that Chemistry first engaged his attention; and as a Member of the Manchester Literary and Philosophical Institution, of which he afterwards became President, he placed before them in successive years a series of papers of great value, in connexion with this and other branches of Natural Philosophy; evincing both the extent of his objects and the energetic and successful labour he bestowed upon them. We have not space to enumerate these different Memoirs; but may say generally that the most important of them relate to the weight, temperature, and moisture of the atmosphere, furnishing, with his researches on rain and evaporation, the basis of modern meteorology—to the various phenomena of heat and cold, as produced by or determining the state of other bodies—and to the constitution of mixed gases, and especially of those forming the atmosphere. Later observations and experiments, less rude than those which he employed, have tended to invalidate some of his conclusions. But many remain untouched—all have contributed to the advancement of science—and all give eminent proof of his sagacity and boldness of research.

* Again the slowly rising notes assail—

As if some tender maid, unseen, unknown,

Sigh'd for neglect—yet tuneful swell'd the gale,

To melt th' unfeeling heart with sorrow's plaintive moan.

We do not here follow the labours or writings of Dalton into the great discovery of his life, as we shall speak of this hereafter. Before it was sufficiently matured for publication, he was invited early in 1804 to give a course of Lectures on Natural Philosophy at the Royal Institution in London. With some kind and valuable aid from Davy, he appears to have gone through the course satisfactorily ; and, from his own account, with a good deal of applause. We cannot but think, however, that he unconsciously overrated his success ; and that what he considered such was in some part a courteous regard of his audience to the simplicity and peculiarities of the man. A few years later, when his discoveries were still only partially known, we heard him deliver a short course on this subject at Edinburgh to a scanty audience. It would be hard to conceive anything more uncouth or ineffective than his manner of dealing with the great physical truths that lay before him. His experiments, as made in public, frequently failed. His voice was harsh, indistinct, and unemphatical ; and he was singularly wanting in the language and power of illustration, needful to a lecturer on these high matters of philosophy, and by which Davy and Faraday have given such lustre to their great discoveries. Among other instances of his odd appropriation of epithets, we recollect that in treating of oxygen, hydrogen, nitrogen, &c.—those great elements which pervade all nature—he generally spoke of them as ‘*these articles* ;’ describing their qualities with far less earnestness than a London linen-draper would show in commending the very different *articles* which lie on his shelves.

Dalton’s doctrines therefore needed other advocacy than his own to bring them fairly before the world. Nor was this aid wanting. We shall have to mention before we conclude the names of those eminent Chemists who speedily recognised the value of the discovery, and sought by their labours to verify and extend it. His own life proceeded meanwhile in the same course of tranquil labour. He was now, however, less occupied with new objects than with the completion of his previous researches, and the removal of objections which had been raised to certain parts of them. With all his love of truth, in science as in other things, Dalton was strongly tenacious of conclusions once formed ; and there were many opinions to which he clung, long after more exact experiments than his own had shown them to be doubtful or inadmissible. We may name as instances, his obstinate adherence to the atomic weights he first assigned, though proved to be incorrect—his reluctance to adopt the doctrine of volumes, received by all other chemists—and his long struggle against the recognition of chlorine as a chemical element.

Though always recluse in his habits, his reputation, now established both at home and abroad, inevitably enlarged his intercourse with the world. Manchester too, at least those in it who found leisure for anything beyond the labours and profits of the loom, began to feel pride in the fame of their fellow-townsmen. But his private life was little changed in its simplicity—his character not at all. While streets, factories, and steam-engines were growing up multitudinously around, he continued to reside in the same quiet house and family in which he finally closed his career. He seldom went into what is called society. His associates were chiefly those who had pursuits akin to his own, and a few intimate friends and pupils, with whom he sometimes unbent himself after the labours of the day. One of these friends describes him as exceedingly cheerful and facetious on such occasions. We can readily believe in his cheerfulness, but find it difficult to imagine in Dalton anything approaching to wit. Even in the fashion of his amusements there was the same order and method as in other things. Every Thursday afternoon he indulged in his favourite diversion of bowling; watching with a sort of scientific eagerness the motions of the bowls, and noting down minutely in a book all the losses or gains of the few pence for which the game was played. In every other habit of his life, as to hours, labour, and food, there was the same simplicity, order, and temperance.

Occasionally he visited London, or made excursions into the Lake scenery of his native county. A notable incident in a life thus tranquil was a visit to Paris in 1822, which we know to have afforded him singular pleasure. Six years before, he had been elected a Corresponding Member of the Academy of Sciences—a proof of the reputation he had already earned abroad. Mr. Dockray, his companion on this journey, graphically describes a dinner given to Dalton by Laplace at his country-seat at Arcueil, the beautiful grounds of which derive no less fame from having been the residence of this philosopher, than from the earlier destiny of the spot as the abode of the Emperor Julian, when Governor of Gaul. At this dinner Berthollet, Arago, Cuvier, Biot, and Fourier were among the guests—names all illustrious in the annals of science. Mr. Dockray pictures to us Dalton walking in the evening through the ruins which yet remain of Julian's residence, between Laplace and Berthollet—a remarkable group, and almost as much so in the diversity of the men as in the community of their fame. From our recollection of Laplace we feel how great must have been the contrast between him and Dalton—the latter what we have already described him—the former equally placid in demeanour, but with the air, habits, and courtesies of an old French nobleman. In estimating their
relative

relative genius we must needs rank Laplace far above the level of Dalton. Both of them mathematicians, they yet trod in mathematical paths so remote from each other, as almost to efface every vestige of this connexion. The very diversity here is the exponent of the scientific character of the two men. Dalton may be said to have worked in *straight lines*, both in mathematics and general physics; with definite objects placed clearly before his conceptions, which he pursued steadily by the simplest, or even rudest, methods to the attainment of the results desired. The genius of Laplace took for its sphere of action the wide domain of the universe: and while by the mighty power of his mathematical analysis he was removing anomalies, and reconciling even the secular perturbations of the planets to the one great law of gravitation, he applied the same power and the same methods of evidence to almost every part of human knowledge. He worked not in straight lines, but sweeping over a vast circle, and bringing each part into relation with the whole.

It is difficult to give any single definition of genius, having due regard to the endless varieties and anomalies which present themselves in the human intellect. In the higher acceptation of the term, Dalton could hardly be called a man of genius. He had not those wings with which some men soar over the ocean of undiscovered truth, discovering regions to be submitted hereafter to human intelligence and power. But he brought to his researches, as we have seen, the habits of a sagacious and intrepid thinker, swayed by no authority but that of facts, and sedulous in seeking for these by his own labours and methods. We believe this description to include all that is most peculiar in his character as a philosopher.

Dalton's connexion with the French Academy was not limited to his first honour in it. In 1830, on the death of Sir H. Davy, he was elected to fill his place as one of the eight Foreign Associates of the Academy; a distinction, from its rarity, fitly regarded as among the highest which science can bestow. It is remarkable that until 1822 he was not elected a Fellow of the Royal Society. The absence of all ambition or effort on his part must be received as the cause of this delay. In 1826 his high merits as a discoverer were fully recognised by the Society in the award to him of the first of the royal prizes given after their institution.

Honours indeed now began to fall more thickly upon him. The establishment of the British Association in 1831, the annual meetings of which Dalton repeatedly attended, was in some part concerned in this effect. Though his discoveries were at this time fully established and familiar to the scientific world,

the seclusion of his life had permitted few to know him personally; and the Quaker philosopher, now well advanced in years, stood among his brethren in science at these meetings, a new object of attention and interest. The simplicity of his demeanour, from which age had taken off its earlier uncouthness, won upon the feelings of all; and even at later meetings of the Association, when the novelty had worn off, Dalton was ever regarded with affectionate veneration.

In 1832, at the meeting of the Association at Oxford, the honorary degree of D.C.L. was conferred upon him, in conjunction with Faraday, Brewster, and Robert Brown. The same honour he received at Edinburgh two years later. In 1833, under Lord Grey's government, a pension of £150. a-year was settled upon him, providing a happy release from the burden of elementary teaching. About the same time the people of Manchester subscribed 2000*l.* for the statue of a man who thus honoured their town; and its execution was fitly committed to Chantrey, whose genius rendered it a wonderful work. While Dalton was in London, sitting to this great sculptor, it was suggested by his friend, Mr. Babbage, that he should be presented at the king's levee. His own acquiescence being obtained, the preliminaries of his dress as an Oxford Doctor of Laws settled, and preparatory instructions given by enacting the levee in a private room, he was presented to William IV., who seems to have questioned him with the kind familiarity which belonged to that sovereign's nature. Mr. Babbage, the *dux* as well as *auctor* in this presentation, heard one court officer say to another, 'Who the d—l is that fellow whom the king keeps talking to so long?' This gentleman would have been still more surprised had he seen the Quaker garb concealed under the scarlet robe of the University of Oxford.

Dalton's life was continued ten years beyond this time, to the age of 78, but we have little more to record. The last few years formed a period of gradual but sensible decay in his faculties both of mind and body, consequent upon a paralytic seizure in 1837, followed in 1838 by a slighter attack of the same nature. He did not die until 1844; but the antecedents of the change were on him before, and, for some time at least, consciously so to himself. In 1840 he presented a paper to the Royal Society on the phosphates and arseniates; so obscure throughout, and the conclusions so erroneous, that the Council declined its publication in the Transactions. Dalton, much mortified, printed it separately, with the indignant comment annexed to it—'Cavendish, Davy, Wollaston, and Gilbert are no more.' Even after this, indeed, he published four short chemical

mical essays ; but these were probably the result of prior labours, since the last two contain the elements of a discovery of so much interest, that he himself says, 'It is the greatest discovery that I know of, next to the atomic theory.' We may briefly denote the subject, by stating that it was that curious research into the relative conditions of the water and solid parts of hydrated salts, which has since been so admirably prosecuted by Playfair and Joule; verifying in the main, while modifying in parts, the remarkable results obtained by Dalton's sagacity. We do not find anything to tell us at what period the latter was engaged in this inquiry; but doubtless some time before that impairment of his mental powers to which we have just alluded.

At Dalton's age a change of this nature, and evidently connected with cerebral disease, is insuperable by remedies, and sure to be augmented by time. Though appointed a vice-president at the meeting of the British Association at Manchester, 1842, it was merely as a tribute to his name. In May, 1844, another fit occurred; and on the 27th of July he fell out of bed, and was found lifeless on the floor. A *post-mortem* examination showed no recent rupture of any blood-vessel, but great venous congestion; and in one part of the brain distinct traces of the extravasation, which had probably produced the first paralytic attack. There was too much of ostentation in all that followed the event. His coffin, placed in public in the Town Hall, was visited by more than 40,000 spectators, and a procession of nearly 100 carriages followed it to the grave. This was scarcely in accordance with the life and character of the man.

The portrait of Dalton, prefixed to Dr. Henry's volume, and taken from Chantrey's bust, faithfully represents his countenance, and especially what we would venture to term the *austere gentleness* of his expression. His was a face which told the whole character at once—its earnestness, simplicity, and truth; and even that power of patient, methodical labour, which marked and determined every step in his career.

We have very little clue to Dalton's religious opinions. He was scarcely ever heard to allude to the subject; and though he attended twice every Sunday at the Friends' Meeting-House, he never took other than a silent part in their devotional exercises. When such was his reserve upon this point, even to those most intimate with him, we have no right to hazard suppositions of our own, which can never be verified, and which might perchance be widely removed from the truth.

After this short sketch of Dalton's life and personal character, we have still to speak of the discovery which gives the greatest lustre to

to his name, of its connexion with prior systems or theories, and of the influence it has had on the subsequent progress and direction of physical inquiry. Yet we feel the difficulty, if not impossibility, of giving a popular view of the atomical philosophy. Its relations to every branch of natural science have become so numerous, close, and complex, that no superficial glance could present more than a vague idea of the grandeur of the theme; while, if pursued into details, its illustration becomes equally obscure from their multiplicity, from the questions still existing upon matters of fact, and from controversies which yet hang over some of the conclusions of theory.

Nor does the difficulty end here. In discussing these questions of the atomic theory, we often touch on that debateable ground between mathematics and metaphysics, which D'Alembert has well named '*l'abîme des incertitudes*,' there being scarcely a step in the discussion which does not approach in some point or other to this boundary of human intelligence. While modern science is defining by strict numerical formulæ the proportions in which the molecular combinations of bodies take place—and often with such certainty that the chemist can foretell the results of an analysis before the labours of the laboratory have begun—the demonstration of facts thus obtained is at every step urging the mind towards those unseen properties and profound laws of the material world, where thought is forced to pause and further demonstration is lost in darkness. Some men, by a certain felicity of faculties, may penetrate into this obscurity beyond their fellows; but to all there is a limit, which such men also are best able to discover and define. There may be rashness indeed in marking it too absolutely, for the science of our own day has often swept over what seemed to be the final limits of our knowledge; and the subject before us is one where physical evidences still crowd upon us from so many separate and unexpected sources, that it is hard to curb the efforts of the mind to theorize upon the results already obtained.

This very multiplication of proofs is in itself a hindrance to a concise and popular view of the modern atomic doctrine. The physical evidence is not merely various in its sources, but presents peculiar modifications, adding much to its complexity. The recent discoveries in Isomorphism, Isomerism, and Allotropy (names in themselves formidable to the ear), indicating some of the various modes in which the molecules of matter, simple or compound, are related to, or act upon, one another,—all bear essentially on the question of the atomical constitution of bodies; and require an interpretation accordant at least, if not common, to all. An elementary view of the subject is further
embarrassed

embarrassed by the anomalous or doubtful points which still remain for solution,—such as the case of a numerical series, perfect in its other parts, being stopped by an anomalous fraction, only to be removed by a better analysis which may bring the refractory element into the scale from which it seemingly departs; or by altering the first terms so as to convert the fraction into a simple number in the series.

The statement of these difficulties is not altogether without its use. It suggests, first, the demarcation, as far as such can be drawn, between the metaphysical and physical parts of the atomic philosophy—between that which is purely or chiefly speculative, and that which depends on experiment and is expressed by formulæ of numbers. And further, in regard to the latter class of researches, it indicates the purport and scope of the inquiry, as embracing all those relations of bodies which depend on the numerical proportions, arrangement, or mutual substitution of the atoms composing them.

Following then this suggestion as to order, the speculative part of the atomic philosophy first comes before us. In every age and community there are certain minds prone, from their very constitution, to an earnest scrutiny of the world around them. It is an instinctive and almost compulsory use of one of those powers committed to man by his Maker; the variety of which powers in different men seems as much the object of a wise design, as their original bestowal. The mere existence of Matter in its relation to Spirit, and the endless forms and changes which material bodies assume, whether subordinate to human will or not, irresistibly excite such minds to some form of speculation, however vague in method or conclusion. We may omit here all notice of those crude notions of earlier ages and ruder races on this subject, which have partially come down to us; but we must pause awhile amidst the riper speculations on the elementary qualities of matter, which the philosophers and poets of Greece and Rome have transmitted to later ages. To the Greeks more especially we owe those theories, at once subtle and bold, which, while they seize a portion of truth by a sort of intuitive perception, do yet neglect to fortify this by experiment or exact observation. It is hard to explain how a people, not merely subtle and inventive, but capable of high thoughts and philosophy, and keenly inquisitive into the secrets of nature, should never have been fairly imbued with the *principle* and methods of experimental research. The exceptional cases are rare, and rather augment than lessen our wonder at the fact. It is surprising that the success of particular experiments and inductions should not have led the way to other like researches, even had the principle of

of inquiry not been suggested by the phenomena of the world around.

However this may be, the absence of anything like analysis limited the Greek philosophy to purely speculative doctrines regarding matter, and the various concourse and combinations of atoms to which its forms and qualities are due. Of these theories, the volume of Professor Daubeny now before us—unpretending in form, but of great merit in execution—gives a clear and sufficient account. Dr. Daubeny brings indeed high qualifications to his work—a philosophical spirit, classical knowledge, and an intimate acquaintance with the doctrines and discoveries of modern Chemistry. All are required for the complete view of a subject of such wide compass and complexity.

The first great problem belonging to it—one which has engaged the attention of thinking men in all ages—is the origin and nature of Matter, as distinguished from Mind or Spirit, and also from that notion of the *void* in space which has ever entered into the inquiry. The genius of the Greek philosophy dealt with this question in its most abstruse forms; but not before such speculations had already found place in the philosophical, religious, or popular dogmas of yet earlier and more remote Oriental races, to whose mental temperament they seem to have been especially congenial. Stripping off the various dress and disguises of language, they are in fact the self-same questions which have descended to our own time; and which we are destined to transmit—still unresolved, though better defined—to our own philosophical posterity. Unaided human reason, indeed, under whatever form of words or logic it may shelter its weakness, must ever be baffled by such questions as,—whether matter has any existence apart from the perceptions of the intellectual being?—whether it is eternal in itself, and moulded only by the acts of creation, or actually brought into existence by the power which has thus moulded it?—whether, if eternal, its nature be not such as to limit and constrain this power, which has framed from it the order of things we see around us? * Wonderful we may well deem it, that man should be gifted with a spirit able to propound those and other like subtleties to itself. But true philosophy consists in setting a boundary between these vague impracticabilities, which belong not to our reason, and that great field of exact observation and experiment which the Creator has privi-

an actual inherent *malignity* of nature, opposing itself to what is good in creation, and thence bringing evil into the world. In the words of Theophrastes, matter is *το πρῶτον καὶ ἰσχυρὸν, οὐδὲ δεικνύμενον τοῦ Εὖ*. The doctrines of the Chaldeans, of Zoroaster, and of the Indian mythologies, are all based, more or less, on this conception.

leged man to work in, by giving him faculties fitted for this wiser and better labour.

All that can rightly be called atomic philosophy—the investigation of matter in its molecular parts, and under the different combinations and mutual actions of these—comes distinctly within this field of legitimate inquiry. Yet here, too, rash speculation had a long period of supremacy. We have already alluded to those hypotheses of the Greek philosophers, through which, unaided by experiment, they sought to explain the multiform shapes, combinations, and changes which matter assumes or undergoes. They saw, as it was easy to see, that for such an explanation it must be supposed divisible into parts of exquisite minuteness: since under no other conception than this are the phenomena of possible fulfilment. It was farther seen (and almost by the same necessity) that these minute parts, molecules, or atoms, must have definite relations, whether of attraction or repulsion, to one another. All nature, animate or inanimate, teems with evidence to this effect, and no experiment was needed to attest it. The conception of definite proportions in their molecular relations—now ripened into a great physical law—can hardly be said to occur in the ancient philosophy, though some few passages may vaguely express the idea. But another question, yet current in our own time, and which in some sort lies at the bottom of every atomic theory, engaged more distinctly the notice of these schools of antiquity—a question which neither reason nor experiment can ever do more than settle presumptively—viz., whether there are truly ultimate molecules or atoms of matter insusceptible of further division? or whether we must here, as elsewhere in nature, veil our reason before that metaphysical infinite which baffles alike definition and conception, and consider matter as divisible without limit or end?

The most rational of the Greek philosophers settled this abstruse question in the same way in which it has been presumptively determined by the sounder methods of modern science. The phrases employed (*αδιαίρετα μεγεθη—αδιαίρετα σωματα—αμερη τα ελαχιστα, &c.*) interpret to us their belief that there are portions of matter, inconceivably minute, which are absolute units in themselves, and admit of no division beyond. This doctrine is wholly distinct from the ancient theory of the four elements (the ‘four champions fierce’ of Milton), which served as a coarse formula for reason to work upon, before it had been shown by experiment how completely these elements are mutually convertible throughout every part of the material world.

Another point in the ancient atomic philosophy, anticipating modern inquiry though running beyond it, is the question as to the

the form or configuration of those indivisible atoms, which may be regarded as the true units of the material world. Here, again, all was mere speculation; and the mathematical forms assigned to different conditions of matter were generally based on the feeblest and most frivolous analogies. Whether modern science, with its more severe and scrupulous inquiry, can ever attain to more perfect proof, is yet hidden in the future. Certain paths, which we shall hereafter notice, seem opening in this direction, and have been zealously pursued. We live in an age of *new methods*, as well as new facts in science; and where the object is not in its nature insuperable by human reason, we may venture to aspire, if not to certain truth, at least to that degree of presumptive proof which is proximate to it.

In the foregoing outline of the earlier questions and opinions as to the atomic constitution of matter, we have refrained from naming those of the ancient philosophers, to whom we chiefly owe them, believing that we might thereby convey a clearer view of their purport and success. It will occur to others, as to ourselves, that the history of human knowledge is often more clouded than illustrated by the long array of names and shades of opinion, which are made to enter into it. In the personal narrative of these victories or vagaries of human thought, the reader loses sight of the questions which lie at the bottom of the whole, and fails of discerning what has really been done, or still left undone. We cannot, however, omit to name some of those who early laboured on the subject before us, seeing the eminent place they hold in the history of mankind.

It was impossible indeed that such men as Pythagoras, Plato, Aristotle, Democritus, Empedocles, and Epicurus—for these names stand on the list—should live in a world full of such strange and abstruse problems, without being attracted forcibly to them. The principle of numbers, as propounded by Pythagoras, though extravagant in its mystical applications, yet is in some sort an anticipation of what now rests on a close induction of facts. Leucippus has been somewhat vaguely recorded as the first who treated of the atomical composition of matter. Democritus and Epicurus are with more certainty reputed as the philosophers who gave higher form and consistency to the theory, including under it the various questions to which we have already adverted. We are far from adopting Bolingbroke's phrase of the 'lofty madness' of Plato (based, we believe, upon a very scanty knowledge of his works), but must nevertheless admit that his doctrines respecting matter are metaphysical without any distinct meaning. Aristotle brought to the subject a more practical understanding and a larger observation of nature, yet

yet added little to our real knowledge. His *πρωτη ύλη*, or primitive matter, is contrasted with the *νοῦς*, or intelligence, which brings it into form and action. He seeks, through the doctrine of the four elementary properties, to explain the various conditions which matter assumes; and, misguided by that notion to which the Greek philosophy ever leant—of opposite and neutralising qualities, he failed to perceive the simpler and truer induction, that heat and cold, dryness and moisture, are not conflicting elements, but different degrees of the same quality or state. He compromises the question as to the infinite divisibility of matter, by admitting that atoms may be actually indivisible, though not *potentially* so—a distinction of a scholastic kind, and aiding little towards the solution of the question.*

We pass over a long period to come at once to Lucretius, as the expounder in sublime verse† of the doctrine in which Epicurus gave more perfect system to the atomic theory; extending and modifying the views of Democritus and others who had gone before. A few lines, however, must suffice us for the record of this system, which many of our readers may already know in part through the great work of the Roman poet.† It represents the space or void of the universe as penetrated and traversed in every direction by tides or currents of elementary indivisible atoms—infinately minute, but possessing gravity—of various figure or shape, but these unchangeable for each—having an intrinsic power of motion, and unceasingly permeating every part of space with inconceivable swiftness. From the fortuitous concourse, collision, and adaptation of these atoms, thus eternally in motion, the material world is formed, and the various compound bodies upon it are successively generated, changed, or renewed. The seeming attribution of creative power to the self-organising nature of the atoms themselves, and the negative condition assigned to the gods by Lucretius, have drawn down the reproach of atheism on this system. It may more justly perhaps be called an abandonment of the popular mythology of the age in which the poet lived.

This is the outline of the doctrine: the details, whether furnished by philosophy or poetry, we have little room to dwell upon. It has not been the fortune of any other philosophical hypothesis (unless we suppose an exception in the lost writings of Empedocles) to be thus ‘married to immortal verse.’ If it be alleged that the greatness of the poems of Lucretius was not so

* We quote the words of Aristotle, as characteristic of the style of this great writer: ‘*Ἐν τῇ συνίξει πιστεύει μὲν πολλοὶ ἡμῶν, ἀλλ’ οὐκ ἐντελέχεια ἀλλὰ δύναμις.*’

† Those who may seek for the details of this doctrine will find them perspicuously stated by Dr. Good, in his ‘Book of Nature.’

estimated by his contemporaries, we admit the fact ; but attribute it chiefly to the nature of his subject, less congenial to the mind of Rome than to that of Greece, and which even Cicero scantily admits within the pale of his philosophy. Still we may confess our surprise to find in Ovid the only adequate acknowledgment of the grandeur of Lucretius as a poet ; and that Quintilian, a consummate critic, should notice him in terms of such bald and languid commendation.

Quitting this sketch of the ancient atomic doctrines, and passing over, as almost null, all that the mediæval philosophy and even the Arabian chemistry produced, we proceed to the later opinions, sanctioned by the great names of Descartes, Newton, Leibnitz, and Boscovich. Newton, attributing to God the first creation of primitive units or particles of matter, describes their endowments in terms not unlike those which Lucretius applies to his self-acting atoms. Leibnitz, resting somewhat dogmatically upon his two laws of Continuity and Sufficient Reason, rejected this notion of solid primitive atoms ; and arguing, as Descartes had done, that no body can be admitted as indivisible, sought to supply their place by an hypothesis of *monads*, or points without extension. The more celebrated dynamic theory of Boscovich is a modification of this view ; in which, for the action of material particles, is substituted the idea of simple *centres of force*, that is, points of attraction and repulsion. Though this theory has gained some favour of late, we cannot find in it more than a new mode of expressing the limit of our knowledge ; and the expression faulty in itself, inasmuch as the term *force* is only intelligible where there is *something* acting and being acted upon ; attraction and repulsion are without meaning, unless there is something more than unextended points to be attracted or repelled. Boscovich vindicated his doctrine with much ingenuity ; but we doubt whether it has rendered, or can ever render, any real aid towards the solution of this great physical problem.

We now come with satisfaction to those more recent researches, which, based on experiment, have given to this subject all the higher characters of an exact science. We have seen that the most complete of earlier systems scarcely went beyond the fortuitous concurrence of atoms as the cause of all existing things. It is the pride of our time to have changed chance into certainty—to have submitted to numerical formulæ the various relations of material bodies—and to have framed a system of definite proportions, perfect enough to allow the prediction of the unknown from that which has been already discovered. In fine, it has belonged to the progress of this part of science—as, in truth, of every

every other—to put aside all accident from the creation of what we see around us; and to give proof and certainty of those great laws designed by a Creator, whose wisdom and power we alike recognise in all their wonderful results.

Experimental Chemistry is the portal through which access has been found to this new region of inquiry. A few considerations will make this clear to our readers; and it is important to the understanding of the subject that it should be so. Whatever reasons might be afforded by the obvious changes of material bodies for the atomic theory of their constitution, no absolute proof could be derived from them. It was a strong presumption of the existence of minute, perhaps indivisible, molecules; but did not go beyond this. The discovery of fixed multiple relations of weight or volume in all chemical combinations was the great fact which at once substituted a science for a mere probability; and converted an hypothesis, barren of results, into a system and law of nature, fertile beyond any other in its consequences and conclusions.

We would especially dwell on the effects produced by the admission of *weight*, as a principle and instrument in this research. The fate of Chemistry, as the science mainly concerned, may be said to have hung upon the balance. We are now so accustomed to the method of numbers and weights, that it is not easy to recognise the science as ever existing without it. Yet such in great measure was the fact. To Lavoisier, almost a contemporary, we mainly owe the introduction of this principle and its due application; at once subverting theories, like that of phlogiston, which had grown up without such correction, and laying the foundations of new and more certain knowledge. It is easy to discover in this change the basis of the doctrine of definite proportions. If in the relations of bodies to one another, as determined by chemical processes, we find the weight of those entering into combination, or separating from it, to be absolutely and invariably the same for each, the *principle* is already obtained, and prepared for extension to the innumerable cases which chemistry puts before us. We are the more earnest in pressing these general views, inasmuch as they help us to comprehend the whole history of this branch of science. It is obvious that the processes of an imperfect analysis could never substantiate doctrines which have the numerical proportions of weight for their foundation. It is the increasing exactness of analytical chemistry which has furnished facts and arguments for the new theory; and even at the time we write, corrections are still made and anomalies removed, by the careful repetition of old experiments, or by the substitution of others more certain in result.

[Coming

Coming now more directly to the history of these discoveries, we find some questions of priority not altogether free from difficulty. This, it is well known, has occurred more or less in almost every similar case—the result sometimes of accident, in other cases the effect of a simultaneous direction of the labour and genius of many to objects already indicated by prior research. In the history of the greatest discoveries—even that of universal gravitation—we find the record of men who have seen the light before them, have approached near to it, but have missed the sole path by which the lamp could be seized. In astronomy the coincidences of discovery are frequent from the very nature of celestial observation. A new object in the heavens is simultaneously present to the telescopes of distant lands; while objects already familiar assume, in the endless cycle of their changes, positions which afford new phenomena to observers, far removed from each other. The more complex questions belonging to that signal triumph of astronomy, which brought the planet Neptune to sudden light, have been noticed in a late number of this Review. But the controversy which most bears on our present subject, is that which has of late been actively revived as to the discovery of the composition of water—the greatest single step ever made in chemical science. We do not enter on the question here; but merely cite it as a striking instance of that concatenation by which the labours of men of genius are blended together for the advancement of knowledge and the good of mankind.

The closest anticipations of Dalton's discovery are, doubtless, to be found in the researches of Wenzel and Richter, two German chemists, and of Mr. Higgins, of Dublin. Wenzel led the way, now nearly eighty years ago, by the execution of very exact analyses of neutral salts, which gave proof that when two such salts decompose one another, the compounds thence resulting are precisely neutral also. The two bases and two acids are exchanged in proportions exactly equivalent, and two new salts are formed, without either loss or addition in the act of change. A little consideration will show that this single fact, well attested, discloses the whole principle of definite proportions; and the possibility, by a simple calculation, of making a few analyses of such neutral salts the key to others yet unmade. Wenzel recognised this principle, which was taken up fifteen years later by Richter, who verified the facts, and gave a tabular form to the reciprocal proportions or equivalents thus obtained.

The researches of Mr. Higgins, first published in 1791, make a still closer approximation to those of Dalton, and may seem in part to justify the claim of priority—put forward by himself when the subject was yet fresh before the world, and since urged by others

others on his behalf. There can be no doubt that Mr. Higgins announced thus early, as the result of his inquiries, certain conclusions which tally closely with those obtained by Dalton,—as, for instance, that a molecule of water is composed of one particle of oxygen united to one of hydrogen—that the five chemical compounds of oxygen and nitrogen vary in the multiple proportions of oxygen added to the single particle of nitrogen—that sulphureous acid contains one particle of sulphur with one of oxygen, sulphuric acid two particles of the latter element. These conclusions, since verified, are doubtless very remarkable; the more so as they seem to have been derived from imperfect data, and without any clear conception of the great consequences they involve. But whatever rank Mr. Higgins may finally take as a discoverer, his researches fell at the time upon a heedless world. Dr. Henry gives conclusive evidence that Dalton was ignorant of them until long after he had matured his own doctrines. He read little—thought alone and for himself—and was too upright not to avow what he got from another. His very nature made it impossible for him to be a plagiarist.

We may further remark that even had the valuable labours of Mr. Higgins been known to him, he still must be accounted the discoverer of the general law of multiple proportions—of their connexion with the relative weights of combining atoms, and of many of the methods by which this great principle is verified and made the foundation of practical chemistry. These are the points upon which Dalton's fame will rest with posterity.

Dr. Henry has sought to mark the successive steps of thought and experiment by which he was led to their conception and development. If this part of the narrative be obscure, it is because Dalton himself has furnished no materials for such a history. We are told of Kepler that he tried eighteen hypotheses as to the orbit of Mars, before reaching the discovery of the true one. Dalton was led by the course and results of his earlier labours to conceive the power of subjecting to numerical forms the endless and seemingly capricious varieties of chemical phenomena. We know not precisely where the light first broke in upon him—where, perchance, it was again obscured for a time by the imperfection of the analyses upon which his doctrine depended—or where, finally, he saw before him the full day of the discovery. The main facts appear to be that he derived his earliest conception of the law of multiple proportions from his experiments on gases or matter in the aeriform state; that in a paper read to the Manchester Society, Nov. 12, 1802, he announces the first example of the law in the combinations of oxygen and nitrous gas; that the atomic view of chemical combinations occurred to him
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in direct sequel to, if not simultaneously with, the establishment of this law; that in October, 1803, he read another paper to the Society, in which, after stating that he believes the inquiry to be entirely new, he assigns the relative atomic weight of 21 bodies gaseous, fluid, and solid; and that in May, 1808, he published his '*New System of Chemical Philosophy*,' embodying these various results of the continuous labour of years. In a letter to his brother Jonathan, March, 1803, he describes himself as having 'got into a track that has not been much trod in before.' This was the track, and these the discoveries to which it led him.

In seeking to convey to our readers, not familiar with these subjects, a clear idea of them, we have recourse to the simplest illustrations as really the most instructive; such as will indicate the general laws, without complicating the description with those points which are subordinate, or which still remain questions of controversy. Two great steps of progress are especially to be noted in the discovery. The first in order of time as well as in order of thought and deduction, is the *Law of multiple proportions*, originally derived, as we have seen, from a certain class of compounds—the neutral salts—and afterwards extended so largely to others as to assume the character of a general law of chemical combination. The principle, to state it briefly, is, that when bodies, under whatever form, enter into such combination, or separate from it, they do so in the same fixed proportions—that these proportions are equal or multiples of one another, and that intermediate quantities or proportions are never found to exist. The earlier exceptions to this law have been gradually removed as chemical analysis acquired greater exactness—a striking evidence in itself of the truth and completeness of the discovery. Cogent, however, as were the facts upon which it rested, there was at first some hesitation among Chemists in adopting it. The eminent name of Berthollet had just given currency to the doctrine that the mere quantity of a combining ingredient, irrespectively of other proportions, was largely concerned in all chemical affinities and combinations; and this opinion was ably defended by certain chemical writers. The controversy, however, could not long be maintained in the face of evidence almost mathematical in kind, and all other views speedily merged in the one doctrine we have just stated.

Here, then, was a mighty gain effected not merely to Chemistry, but to physical science in its every part. By introducing the function of numbers in scrutinizing the wonderful changes which take place, invisibly to us, among the molecules of bodies in chemical action, we may be said to have gained nearer access to
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one of the great facts of creative intelligence. For if these elementary molecules are thus governed by numerical relations in every act of union or separation, it is obvious there must have been some primary conformation or adaptation which alone could fit them to fulfil this condition. And this conclusion is alike valid, whether we adopt the number of bodies which are regarded as elementary under our present knowledge, or admit the more probable belief that this number will be greatly reduced hereafter by new methods of analysis.

We have mentioned the neutral salts as first yielding the principle of multiple combining proportions. The combination and separation of gases by volumes afforded the same result, and by an inference still more simple and direct. Two gases, chemically uniting to form a compound, invariably combine in the same measured volumes of each, or in multiples of one on the other, if there be more than one product of this union. The same precise proportions are found in the separation of the compounds thus formed. There is a peculiar grandeur to those who look on nature aright, in the simplest forms of demonstration of a great natural law. We feel this when having before us the two glass tubes, receiving severally the streams of oxygen and hydrogen which arise from the decomposition of water—one volume by measure of the former to *two* of the latter—and these proportions so exquisitely exact, that the nicest graduation of the tubes can detect no deviation in the results. These results represent to us not merely the contents of the two tubes, but the relative volumes of those two airs enclosed in and forming, by their union, the total mass of waters over the globe.

Out of this great law of multiple proportions in all chemical compounds arose the further discovery, more especially due to Dalton, of the relative weight of the combining molecules or atoms—another vast step in the progress of natural science. The method of the discovery is as striking from its simplicity as the result from its grandeur. The reasoning of Dalton ran thus: if in the chemical union of any two simple bodies we suppose a single atom of each to form the combination, then if by analysis we obtain the precise relative weights of the two in the compound, we gain in effect the relative weight of the atoms thus combined. Take the case of water in illustration. The uniform and peculiar characters of this wonderful fluid suggested the inference which Dalton adopted, that it is formed by the union of a single particle of hydrogen to one of oxygen. Analysis proving the relative weight of the two elements in water to be as 1 to 8, the conclusion was immediate that the same ratio represented

sented the weight of the atoms of hydrogen and oxygen respectively in this fluid.

But more was needed yet to justify the conclusion, and some third body required to be brought into the chain of evidence. Taking carbon as the instance, and examining carbonic oxide gas, the simplest form of its combination with oxygen, we find the relative weights of the two elements in this compound to be 6 of carbon to 8 of oxygen; whence it is inferred that an atom of each enters into the compound, and that the relative weights of these atoms are as the numbers given. Thus, then, we have obtained three proportions of weight: 1 for hydrogen, 6 for carbon, and 8 for oxygen. Now mark the beauty of the evidence. If these three numbers be correct, we ought to find them recurring, either in simple or multiple form, in the compounds of carbon and hydrogen, thus completing the circle of proof. Let us take the two simplest of such compounds, carburetted hydrogen and olefiant gas. In the former we find the proportions of 2 of hydrogen to 6 of carbon; in the latter 2 of hydrogen to 12 of carbon,—that is, in the one 2 atoms of hydrogen unite to 1 of carbon, in the other 2 of hydrogen to 2 of carbon. Or take another instance, somewhat more complex, but from this very cause still more illustrative. We have got the weights of hydrogen and oxygen; we want that of nitrogen. The chemical compounds of oxygen and nitrogen are five in number,—the analysis of which shows us that the difference depends upon the addition of a single proportion of oxygen, 8, to each successive compound in the series, beginning from the simplest (the protoxide of nitrogen), in which one atom is united to one. Thus, then, we obtain the relative weight of the two—oxygen 8, nitrogen 14. Now let us bring this number 14 into conjunction with hydrogen, denoted, as we have seen, by unity or one. Here ammonia, a compound of nitrogen and hydrogen, becomes the test of truth. The analysis of this substance yields the relation of 14 to 3; that is, 1 atomic equivalent of nitrogen to 3 of hydrogen. The circle of numerical proof is therefore completed, as in the example first given.*

Instances like these—*rationes quæ non persuadent sed cogunt*—might be multiplied without end; adding in each case to the completeness of the evidence, but not required, we may hope, in further illustration of the principle. This well understood, all the collateral points and consequences become easy of comprehension. By such mode of research Chemists have been enabled

* The most recent and complete table of this kind is that given in the Annual of Liebig and Kopp, the close examination of which indicates many curious relations and analogies, explicable only on the atomic theory.

to tabulate the atomic weights of all the bodies, nearly 60 in number, which rank as elementary in our present knowledge. Hydrogen being the unit, the numbers which express weight range upwards even as high as 213; each denoting the fixed and immutable proportions in which the particular body enters into chemical combination with others. We repeat the word *chemical*, because it is essential to keep in mind that the system of equivalent proportions, expressed by a scale of numbers, is that of chemical action, as distinguished from mere mechanical admixture, which may take place in any proportions. But this great principle, we have next to remark, governs the relations of compound bodies as completely as those of the elementary bodies just mentioned. The case of the mutual action of neutral salts, before alluded to, might furnish this inference, but it will be better given in a more simple form. Take the case of the sulphuric and nitric acids. The atomic weight of sulphur is 16, which united with 3 equivalents of oxygen ($3 \times 8 = 24$) gives 40 as the result for sulphuric acid—the actual proportion in which this acid combines with alkalis, metallic oxides, or any other substance. In nitric acid, we have nitrogen 14, and 5 equivalents of oxygen, 40—giving for the atomic or combining weight of the acid 54, the number which actually governs all its combinations. The application of this rule—and as expressing a great natural law we might expect it to be so—seems to have no other exceptions than those which depend on our own imperfect knowledge. The examples of it furnished by the analysis and synthesis of organic bodies are much more complex in kind, and therefore less fitted for illustration; but, as we shall presently see, they attest in a wonderful manner the truth and universality of the principle.

Stopping a moment here, let us see precisely how we are to define the knowledge thus far gained. One essential point will already be understood, viz., that in speaking of atomic weights, it is only the *relative weight* of the atoms, or smallest combining proportion, of different substances, which enters into the question. Of their *positive weight* in relation to any known quantities we are absolutely ignorant; nor has any path been disclosed through which such a result may hereafter be reached. We can hardly say that the value of the discovery is less from this abatement of its extent, since for all purposes of science the relative weights are always the object sought for, and carried into use.—Again, these discoveries teach nothing certain as to the *figure* or *absolute magnitude* of these primitive atoms. Dalton, indeed, was led by various considerations to regard them as spherical, and to de-

scribe and delineate them as such. But this, however possible, is still speculative to our knowledge; and the facts in isomorphism, which we shall speedily notice, might rather suggest various primitive forms than that of the spherical atom alone. As respects the question of magnitude, all that can be sought for with any hope is the *relative magnitude* of those elementary parts; and this inquiry, though far less simple and certain than that of *relative weights*, has been pursued with much zeal and some success both by English and German chemists, though under the form of comparison of atomic volumes rather than atomic diameters. The distinction here involved, and the general relation of volumes to other conditions of matter under the atomic theory, would have demanded further illustration had the limits and design of the article made it possible. We may briefly say, that the estimate by volumes, though never willingly acquiesced in by Dalton himself, fully confirms in every part the principles of the atomic theory; and as respects its particular application to the discovery of relative magnitudes, though the results are still neither certain nor complete, yet the numerical relations and analogies they already afford are very remarkable, and will probably conduct to new and higher proofs of the doctrine before us. In ascertaining the nearly identical atomic volume of certain groups of elementary bodies, closely allied in chemical properties and found generally in close association in nature, MM. Kopp and Schröder, to whom chiefly we owe these researches, are evidently on a path which leads beyond our present view and promises access to yet untrodden fields of science.

Another point remains to be noticed in our estimate of what was attained at this period of the inquiry. Hydrogen, as we have seen, is taken as the unit in the scale of atomic weights. What proof have we that it is really such? Or what proof that there may not be two atoms of hydrogen present in each atom of water, as we have two volumes by measure of hydrogen combining with one of oxygen to form this body? In admitting that the conclusion is not one of certainty, we must add that the doubt is less important than it may seem; for if the unit were so altered as to compel a change of number for other bodies in the scale, the relations of weight and the combining proportions would remain precisely as before. The numerical expression of the series is altered, but nothing besides. We may further notice here a remarkable fact (tending strongly to confirm an original view of Dr. Prout's), that out of Kopp's table of 54 elementary atomic weights, 22 are integral multiples of hydrogen; and several others almost exact multiples of $\cdot 5$, or half an equivalent

valent of this element. Facts of this nature, even while still of doubtful interpretation, are yet the exponents and indices of the general law which embraces all.

Reverting now to the history and progress of these great discoveries, it must be stated that Dalton's views, even thus ripe in proof, did not find instant adoption in the scientific world. We have already alluded to his uncouth and ineffective manner of propounding them, whether by lectures or writing. The very phraseology of *atoms* and *atomic weights* frightened timid reasoners away from the subject; and the boldness of the diagrams by which he depicted his groups of spherical atoms strengthened the belief that it was a rash recurrence to the tenets of an exploded philosophy.* But the husk, however thick it be, is always pierced through when truth lies within the kernel. A few eminent Chemists, among whom Thomson, Wollaston, Gay Lussac, and Berzelius may especially be named, speedily saw the value of the discovery, and applied their own labours to verify and extend it. Dr. Thomson's habitual zeal was quickened by personal communication and friendship with Dalton. Of Dr. Wollaston it was said that he would soon have made the discovery himself if Dalton had not done so; and the mathematical acuteness of his understanding, as well as the direction and method of his chemical researches, might justify this belief, were it not that a certain scepticism of mind perpetually checked and impeded the efforts of which his intellect was capable. His paper on super-acid and sub-acid salts furnished much collateral testimony to the truth of the doctrine, while his sliding-scale of chemical equivalents offered a very ingenious instrument for its application to practical chemistry. In determining by beautiful experiments the law of combination of volumes in equal or multiple proportions, Gay Lussac superadded fresh evidence, better appreciated by others than by Dalton himself: while Berzelius, in his Northern laboratory, executed those numerous and admirable analyses, which, fulfilling in their results every condition of the atomic theory, obtained for it the universal acquiescence of the scientific world. The tables he constructed of atomic weights have required little change but that of enlargement. The beautiful system of chemical formulæ which he devised, denoting

* It was Dalton's opinion that no conception of this kind could be clearly grasped by the understanding, without some embodiment to the sight. The best sanction to the justice of his views is the entire adoption of this manner of illustration by one of the most eminent chemists of the day, Dr. Hoffmann; who, in his admirable lectures on Organic Chemistry at the Royal Institution, designated the most complex organic compounds by coloured atomic symbols; so ingeniously disposed on a sliding frame, that every change, whether by addition or subtraction of atoms, could be shown with the utmost facility.

these atomic relations, was speedily accepted by chemists and is now very generally employed.

The remaining history of the progress of this discovery, as it comes down to our own time, cannot so easily be made clear to our general readers. The labours of Chemists during this period have been not only vast and various, but more profound than heretofore in the objects and methods of inquiry. Deriving impulse from the atomic discoveries, they have carried these, as instruments, into parts of science hitherto inaccessible to research, fully attesting by their success the validity of the means so employed. The whole domain of Organic Chemistry may be said to be a recent conquest thus obtained. The laws of isomorphism, of isomerism, of atomic substitution, have all been determined during the same period by the genius and labours of Mitscherlich, Liebig, Dumas, and other foreign and British chemists. Though it is impossible, within our narrow space, to convey any true idea of these abstruse and difficult researches, we are bound to notice them so far as to show how completely they are interwoven with the atomic principle, and how thoroughly they illustrate all its various workings in the natural world.

No adequate conception of Organic Chemistry in its actual state can be given by a bare definition. It is, as we have said elsewhere, the chemistry of vital products—of matter organised under that mysterious power which we term the *vital principle*, in default of more exact understanding of this wonderful operation of Providence in the world. Including the analyses of the innumerable bodies thus formed, and the examination of the endless series of changes they undergo by mutual action and substitution, this branch of science attains yet higher synthetic results; reproducing artificially, by new combinations, some of those organic compounds, which were known to us before only through the occult chemistry of animal or vegetable life; and evolving from the same elements, under other conditions, new compounds, often of strange and potent quality, which are unknown but in this creation of the laboratory. Of the former class of products, urea, sugar, the oxalic, lactic, benzoic, succinic, and other acids, may be taken as examples: of the latter, we may name *Chloroform*, as one of the most remarkable.

In this vast circle of Organic Chemistry, we find four great elements—oxygen, hydrogen, nitrogen, and carbon—so far preponderating in quantity and efficiency, that the 12 or 14 others combining with them in organic products may be considered subordinate, even if in some part necessary. In the compounds of these four elements, from the simplest to those of the greatest complexity, we find the most perfect and admirable illustrations
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of the atomic doctrine. Number is here not merely a denotation of facts, but an instrument in their discovery. Every condition and change may be defined by formulæ as rigidly exact as a sum in arithmetic or a geometrical demonstration; and in combinations which are so complex that each element entering into them is present under some multiple of its weight, it is found that the addition or abstraction of a single atom in the proportion of any one of them makes a notable, often a marvellous, difference in the nature of the compound. Some of these results are so startling as to be almost incredible, were the proof less certain than it is. There are cases where, the elements remaining the same, a slight numerical difference in the proportion of one or two of them will change an edible substance into a deadly poison. Atomic chemistry tells us what alteration of parts here takes place: but physiology is silent, or nearly so, as to the causes of this wonderful difference of effect on the animal economy. The analogy of fermentation, placed before us by Liebig, is a striking one; but, even if established, it little enlarges our positive amount of knowledge. The margin of the unknown is scarcely less wide than it was before.

While speaking of organic chemistry, we must briefly advert to the doctrine of *Compound Radicals*, as indicating another probable mode of atomic action in bodies. It may be readily conceived, and is fully attested by observation, that some combinations of atoms are much more stable and tenacious than others; and we have, in what is called a compound radical, the union of different atoms possessing sufficient stability to fulfil the part of a single atom, or combining equivalent; and thus entering as a base into various combinations without losing its identity. Cyanogen, composed of one atom of nitrogen and two of carbon, may be taken as the simplest example of such compounds. We cannot, indeed, class this doctrine with the more certain conclusions heretofore recorded, for the conditions of experiment are such that it is difficult to obtain absolute proof. But even were its assumptions not strictly verified, the research still throws new light on the atomic system, and makes the circle of evidence more complete.

The same may be said of those remarkable facts which have been classed under the names of Isomorphism and Isomerism—the discovery respectively of Mitscherlich and Berzelius—and which direct us to the atomic constitution of matter, as the sole means of explaining the phenomena. The term Isomorphism expresses virtually the fact, that identity of crystalline form depends greatly on similarity of atomic composition. Certain chemical elements admit of being grouped together, under such relations,

relations, that various combinations may be formed from among them, which crystallize in the same geometric forms; and with this further notable fact, that such isomorphous groups are closely and curiously analogous in other physical properties. While the law of Isomorphism thus expounds to us the dependence of like forms on corresponding numbers of component atoms, the law of Isomerism discovers to us the many cases where the same elements, combined in the same proportions, do nevertheless produce compounds having very different chemical properties. The several modifications of this phenomenon, interesting though they are, we have not room to notice; but the facts regarded generally involve this remarkable result, that a difference may, and frequently does exist, in the manner and results of the combination of atoms, absolutely *identical* in nature, number, and relative proportion.

What might at first seem a contradiction between these laws, is in fact an exposition of those many modes of molecular composition and change, to which, under modification by other agents, are due all the endless varieties of natural objects around us. Were we not limited to the most simple and elementary view of the subject, these discoveries and others closely associated with them (such as Dumas's Law of Substitution, Gerhardt's System of Homologues, and the recent researches in Allotropy) would require much more copious illustration and detail. Even in our slight notice of them, it will be seen that they are not merely confirmations of the atomic doctrine; but deep inroads, by secure and certain paths, into regions of physical science, which have scarcely been reached before by the boldest imagination or conjecture. We first contemplated these atomic elements as concerned in the various acts of chemical affinity—in determining the union or separation of all bodies in fixed numerical proportions of measure or weight. We now regard them in what can scarcely be called higher relations, because intimately connected with, and not more wonderful than the former; but still such as are less familiar to our knowledge. We have here before us the mutual actions of the molecules of matter, whether simple or compound, expressed not in common chemical relations, but under geometric forms, indicating probable differences in the primitive forms of the atoms themselves, and holding out through such researches some hope that the questions of magnitude and figure are not beyond our reach. Crystallization may almost be defined as the conversion of atomic numbers into a material form and configuration. In all that vast variety and beauty of crystals, giving splendour to our mineral cabinets, and which have been so admirably illustrated by the labours of Haüy, Mohr and Weiss, Wollaston,

Wollaston, Brewster, Beudant, &c., we find proof of the primitive tendency of atoms to group themselves in certain definite figures—to build up, as it were, the crystalline fabric in mathematical lines and proportions. And to this general law Mitscherlich has added the curious fact, that many crystals undergo, from simple exposure to heat, an entire change in their interior structure, while the outward form and solidity remain unaltered; thus proving that intestine motions of atoms may occur, making the most important structural changes in the crystal, and affecting even its optical properties, without the slightest external manifestation. The same fact, of definite motions of particles *within a solid*, has now been observed under so many modifications, that it may be received as one of the most striking proofs of the atomic constitution of bodies; and of the tendency of all matter, through its atoms, to assume those definite forms, of which crystals form the most perfect type and illustration.

A few words we must still add regarding Allotropy. There has been some ambiguity in the use of this word, in relation to Isomerism, Dimorphism, and other terms recently adopted, to meet the various cases of atomic combination. But we refer to it here, as the exponent of certain changes which may be effected in the physical and chemical properties of various simple bodies, without the slightest alteration of their substance by addition or subtraction, and independently of crystallization, yet doubtless under some new arrangement—and probably in each case a determinate one—of their component atoms. Phosphorus and sulphur both furnish examples of these allotropic conditions; but a much more striking one, admitting it to be fully attested, is the conversion of oxygen into Ozone through the medium of electricity. Seeing the proportion of oxygen we continually breathe—its relation to organic life in every form—and the electrical actions and changes ever pervading the atmosphere around us, it is easy to understand the importance of this fact in its future relation to physiology as to every other part of natural science. We would fain invite attention to this allotropic inquiry in general, as a branch of physics less explored than it ought to be. The mutual action and affinities of different atoms form the subject and science of all Chemistry—those of like atoms have been little examined, and are chiefly known to us under the simple form of cohesion of parts. This cohesion itself is liable to incessant change from heat, electricity, and other external agents. Every atom in the iron tube of the Britannia bridge undergoes some alteration of place, when this vast fabric expands from heat, or contracts from cold. Every message of battle or diplomacy, of truth or of falsehood, which trem-
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bles over Europe along the electric chord, puts into motion and change each successive particle of the wire through which it travels with such inconceivable velocity. What the nature of these changes may be, not even the boldest speculator can affirm. The principle of Polarity, now so largely proved and applied in every part of physics, may reasonably be brought in to aid our conceptions, especially where electricity is assumed as the active power. And to this great principle, guided and governed as it is by mathematical laws, we may rightly look for the solution of many of the problems which still lie before us in the material world.*

The foregoing remarks bring us to a subject which, were we writing a treatise upon the Atomic Theory, we could not forbear to notice in detail. This subject, one of the most abstruse and difficult in all physical science, is the connexion between the conditions and changes of atoms, whether in chemical or other combinations, and the influence of those great imponderable agents, electricity, heat, and light—and probably gravitation—which we know to be concerned, in one mode or another, in all these wonderful phenomena. In this research we lose that aid of numbers and proportions which gives validity to other parts of the atomic doctrine; and are cast upon a sea of speculation, where no line has ever yet touched the ground. Nevertheless, the certainty that such a connexion exists; that it is operative in every part of the material world; and that the discovery of its nature would throw light upon the darkest questions of physical science, has led some of the most eminent philosophers of our time to frame hypotheses as to this relation between matter in its atomic conditions, and the elementary powers or forces denoted above. Our ignorance of the true nature of the latter (even whether strictly material, or influences which we cannot define as such) perplexes the inquiry in the very outset—while it is further obscured by the doubt whether heat, light, and electricity are really distinct elements, or modified forms of some common principle of power. Electricity, on several accounts, has been generally taken as the foundation of the problem; and the genius of Davy, Berzelius, Ampère, De la Rive, &c., applied to its solution in this form. Such efforts, though failing of present success, require to be recorded, as illustrative of the

* The late Dr. Prout made some advances towards this inquiry as to the mutual relations of *like atoms*. It has been taken up more recently by Mr. Brodie: who will continue, we trust, to apply his eminent ability as an experimentalist to its further prosecution. It is one of the researches which gives fairest promise of reducing the list of simple substances, by proving that some are only allotropic conditions of others—a manner of *transmutation* which may reasonably be expected from the science of our day.

methods by which modern science seeks to attain its ends, even when proceeding upon hypothesis only.

It is strange and mortifying—yet nevertheless in accordance with the light and shade of all human things—that while true science is thus embracing in its progress every part of the material world—establishing facts, disclosing laws, and scrutinizing by mathematical methods even those actions and relations of matter which are inapproachable by the senses—there should exist simultaneously a series of delusions, in which error, credulity, and imposture are closely interwoven; yet usurping the form and phraseology of real science, and thus misleading many whose intellect in other matters is acute and discriminative. We would fain indulge the hope, recently expressed by one of our most eminent philosophers, that education may in the end provide a remedy against these aberrations; but we still fear that as long as credulity remains a part of human character and temperament, there will never be wanting the agents and materials to work upon it. Our best guarantee lies in the knowledge that follies and impostures are in their nature ephemeral; while no fact of genuine science can ever disappear, except by merging in some higher and more general truth.

ART. III.—*Pictures of Life and Character.* By John Leech.
London. 1854. *

WE, who can recall the consulship of Plancus, and quite respectable old-fogeyfied times, remember amongst other amusements which we had as children the pictures at which we were permitted to look. There was Boydell's Shakspeare, black and ghastly gallery of murky Opies, glum Northcotes, straddling Fuselis! there were Lear, Oberon, Hamlet, with starting muscles, rolling eyeballs, and long pointing quivering fingers; there was little Prince Arthur (Northcote) crying, in white satin, and bidding good Hubert not put out his eyes; there was Hubert crying; there was little Rutland being run through the poor little body by bloody Clifford; there was Cardinal Beaufort (Reynolds) gnashing his teeth, and grinning and howling demoniacally on his deathbed (a picture frightful to the present day); there was Lady Hamilton (Romney) waving a torch, and dancing before a black background,—a melancholy museum indeed. Smirke's delightful Seven Ages only fitfully relieved its general gloom. We did not like to inspect it unless the elders were present, and plenty of lights and company were in the room.

Cheerful relatives used to treat us to Miss Linwood's. Let the

the children of the present generation thank their stars *that* tragedy is put out of their way. Miss Linwood's was worsted work. Your grandmother or grand-aunts took you there, and said the pictures were admirable. You saw 'the Woodman' in worsted, with his axe and dog, trampling through the snow; the snow bitter cold to look at, the woodman's pipe wonderful; a gloomy piece, that made you shudder. There were large dingy pictures of woollen martyrs, and scowling warriors with limbs strongly knitted; there was especially, at the end of a black passage, a den of lions, that would frighten any boy not born in Africa, or Exeter Change, and accustomed to them.

Another exhibition used to be West's Gallery, where the pleasing figures of Lazarus in his grave-clothes, and Death on the pale horse, used to impress us children. The tombs of Westminster Abbey, the vaults at St. Paul's, the men in armour at the Tower, frowning ferociously out of their helmets, and wielding their dreadful swords; that superhuman Queen Elizabeth at the end of the room, a livid sovereign with glass eyes, a ruff, and a dirty satin petticoat, riding a horse covered with steel: who does not remember these sights in London in the consulship of Plancus? and the waxwork in Fleet Street, not like that of Madame Tussaud's, whose chamber of death is gay and brilliant, but a nice old gloomy waxwork, full of murderers; and as a chief attraction, the dead baby and the Princess Charlotte lying in state.

Our story-books had no pictures in them for the most part. Frank (dear old Frank!) had none; nor the Parent's Assistant; nor the Evenings at Home; nor our copy of the *Ami des Enfants*: there were a few just at the end of the Spelling Book; besides the allegory at the beginning, of Education leading up Youth to the temple of Industry, where Dr. Dilworth and Professor Walkingham stood with crowns of laurel; there were, we say, just a few pictures at the end of the Spelling Book, little oval grey woodcuts of Bewick's, mostly of the Wolf and the Lamb, the Dog and the Shadow, and Brown, Jones, and Robinson with long ringlets and little tights; but for pictures, so to speak, what had we? The rough old woodblocks in the old harlequin-backed fairy-books had served hundreds of years; before *our* Plancus, in the time of Priscus Plancus—in Queen Anne's time, who knows? We were flogged at school; we were fifty boys in our boarding-house, and had to wash in a leaden trough, under a cistern, with lumps of fat yellow soap floating about in the ice and water. Are *our* sons ever flogged? Have they not dressing-rooms, hair-oil, hip-baths, and Baden towels? And what picture-books the young villains have! What have these

these children done that they should be so much happier than we were?

We had the *Arabian Nights* and Walter Scott, to be sure. Smirke's illustrations to the former are very fine. We did not know how good they were then; but we doubt whether we did not prefer the little old *Miniature Library Nights* with frontispieces by Uwins; for *these* books the pictures don't count. Every boy of imagination does his own pictures to Scott and the *Arabian Nights* best.

Of funny pictures there were none especially intended for us children. There was Rowlandson's Dr. Syntax: Doctor Syntax, in a fuzz-wig, on a horse with legs like sausages, riding races, making love, frolicking with rosy exuberant damsels. Those pictures were very funny, and that aquatinting and the gay-coloured plates very pleasant to witness; but if we could not read the poem in those days, could we digest it in this? Nevertheless, apart from the text which we could not master, we remember Dr. Syntax pleasantly, like those cheerful painted hieroglyphics in the Nineveh Court at Sydenham. What matter for the arrow-head, illegible stuff? give us the placid grinning kings, twanging their jolly bows over their rident horses, wounding those good-humoured enemies, who tumble gaily off the towers, or drown, smiling in the dimpling waters, amidst the anerithmon gelasma of the fish.

After Doctor Syntax, the apparition of Corinthian Tom, Jerry Hawthorne, and the facetious Bob Logic must be recorded—a wondrous history indeed theirs was! When the future student of our manners comes to look over the pictures and the writing of these queer volumes, what will he think of our society, customs, and language in the consulship of Plancus? We have still in our mind's eye some of the pictures of that sportive gallery: the white coat, Prussian-blue pantaloons, Hessian boots, and hooked nose of Corinthian Tom; Jerry's green cut-away and leather gaiters; Bob Logic's green spectacles, and high-waisted surtout. 'Corinthian,' it appears, was the phrase applied to men of fashion and *ton* in Plancus's time; they were the brilliant predecessors of the 'swell' of the present period—brilliant, but somewhat barbarous, it must be confessed. The Corinthians were in the habit of drinking a great deal too much in Tom Cribb's parlour: they used to go and see 'life' in the ginshops; of nights, walking home (as well as they could), they used to knock down 'Charleys,' poor harmless old watchmen with lanterns, guardians of the streets of Rome, Planco Consule. They perpetrated a vast deal of boxing; they put on the 'mufflers' in Jackson's rooms; they 'sported their prads' in the Ring in the Park;

Park; they attended cock-fights, and were enlightened patrons of dogs and destroyers of rats. Besides these sports, the *dé-lassemens* of gentlemen mixing with the people, our patricians, of course, occasionally enjoyed the society of their own class. What a wonderful picture that used to be of Corinthian Tom dancing with Corinthian Kate at Almack's! What a prodigious dress Kate wore! With what graceful *abandon* the pair flung their arms about as they swept through the mazy quadrille, with all the noblemen standing round in their stars and uniforms! You may still, doubtless, see the pictures at the British Museum, or find the volumes in the corner of some old country-house library. You are led to suppose that the English aristocracy of 1820 *did* dance and caper in that way, and box and drink at Tom Cribb's, and knock down watchmen; and the children of to-day, turning to their elders, may say, 'Grandmamma, did you wear such a dress as that when you danced at Almack's? There was very little of it, grandmamma. Did grandpapa kill many watchmen when he was a young man, and frequent thieves, gin-shops, cock-fights, and the ring before you married him? Did he use to talk the extraordinary slang and jargon which is printed in this book? He is very much changed. He seems a gentlemanly old boy enough now.'

In the above-named consulate, when *we* had grandfathers alive, there would be in the old gentleman's library in the country two or three old mottled portfolios, or great swollen scrap-books of blue paper, full of the comic prints of grandpapa's time, ere Plancus ever had the fasces borne before him. These prints were signed Gillray, Bunbury, Rowlandson, Woodward, and some actually George Cruikshank—for George is a veteran now, and he took the etching needle in hand as a child. He caricatured 'Boney,' borrowing not a little from Gillray in his first puerile efforts. He drew Louis XVIII. trying on Boney's boots. Before the century was actually in its teens we believe that George Cruikshank was amusing the public.

In those great coloured prints in our grandfather's portfolios in the library, and in some other apartments of the house, where the caricatures used to be pasted in those days, we found things quite beyond our comprehension. Boney was represented as a fierce dwarf, with goggle eyes, a huge laced hat, and tricoloured plume, a crooked sabre, reeking with blood; a little demon revelling in lust, murder, massacre. John Bull was shown kicking him a good deal: indeed he was prodigiously kicked all through that series of pictures; by Sidney Smith and our brave allies the gallant Turks; by the excellent and patriotic Spaniards; by the amiable and indignant Russians,—all nations had boots at

at the service of poor Master Boney. How Pitt used to defy him! How good old George, King of Brobdignag, laughed at Gulliver-Boney, sailing about in his tank to make sport for their majes'ties! This little fiend, this beggar's brat, cowardly, murderous, and atheistic as he was (we remember in those old portfolios, pictures representing Boney and his family in rags, gnawing raw bones in a Corsican hut; Boney murdering the sick at Jaffa; Boney with a hookah and a large turban, having adopted the 'Turkish' religion, &c.)—this Corsican monster, nevertheless, had some devoted friends in England, according to the Gillray chronicle,—a set of villains who loved atheism, tyranny, plunder, and wickedness, in general, like their French friend. In the pictures these men were all represented as dwarfs, like their ally. The miscreants got into power at one time, and, if we remember right, were called the 'Broad-backed Administration. One with shaggy eyebrows and a bristly beard, the hirsute ringleader of the rascals, was, it appears, called Charles James Fox; another miscreant, with a blotched countenance, was a certain Sheridan; other imps were light Erskine, Norfolk (Jockey of), Moira, Henry Petty. As in our childish innocence we used to look at these demons, now sprawling and tipsy in their cups; now scaling heaven, from which the angelic Pitt hurled them down; now cursing the light (their atrocious ringleader Fox was represented with hairy cloven feet, and a tail and horns); now kissing Boney's boot, but inevitably discomfited by Pitt and the other good angels, we hated these vicious wretches, as good children should; we were on the side of Virtue and Pitt and Grandpapa. But if our sisters wanted to look at the portfolios, the good old grandfather used to hesitate. There were some prints among them very odd indeed; some that girls could not understand; some that boys, indeed, had best not see. We swiftly turn over those prohibited pages. How many of them there were in the wild, coarse, reckless, ribald, generous book of old English humour!

How savage the satire was—how fierce the assault—what garbage hurled at opponents—what foul blows were hit—what language of Billingsgate flung! Fancy a party in a country house now looking over Woodward's *facetiæ* or some of the 'Gillray comicalities, or the slatternly Saturnalia of Rowlandson! Whilst we live we must laugh, and have folks to make us laugh. We cannot afford to lose Satyr with his pipe and dances and gambols. But we have washed, combed, clothed, and taught the rogue good manners; or rather, let us say, he has learned them himself; for he is of nature soft and kindly, and he has put aside his mad pranks and tipsey habits; and, frolicsome always,
has

has become gentle and harmless, smitten into shame by the pure presence of our women and the sweet confiding smiles of our children. Among the veterans, the old pictorial satirists, we have mentioned the famous name of one humorous designer who is still alive and at work. Did we not see, by his own hand, his own portrait of his own famous face, and whiskers, in the Illustrated London News the other day? There was a print in that paper of an assemblage of Teatotalers in Sadler's Wells Theatre, and we straightway recognized the old Roman hand—the old Roman's of the time of Plancus—George Cruikshank's. There were the old bonnets and droll faces and shoes, and short trousers, and figures of 1820 sure enough. And there was George (who has taken to the water-doctrine, as all the world knows) handing some teatotalleresses over a plank to the table where the pledge was being administered. How often has George drawn that picture of Cruikshank! Where haven't we seen it? How fine it was, facing the effigy of Mr. Ainsworth in 'Ainsworth's Magazine' when George illustrated that periodical! How grand and severe he stands in that design in G. C.'s 'Omnibus,' where he represents himself tonged like St. Dunstan, and tweaking a wretch of a publisher by the nose! The collectors of George's etchings—O the charming etchings! O the dear old German popular tales!—the capital 'Points of Humour'—the delightful Phrenology and scrap-books, of the good time, *our* time—Plancus's in fact!—the collectors of the Georgian etchings, we say, have at least a hundred pictures of the artist. Why, we remember him in his favourite Hessian boots in 'Tom and Jerry' itself; and in woodcuts as far back as the Queen's trial. He has rather deserted satire and comedy of late years, having turned his attention to the serious, and warlike, and sublime. Having confessed our age and prejudices, we prefer the comic and fanciful to the historic, romantic, and at present didactic George. May respect, and length of days, and comfortable repose attend the brave, honest, kindly, pure-minded artist, humorist, moralist! It was he first who brought English pictorial humour and children acquainted. Our young people and their fathers and mothers owe him many a pleasant hour and harmless laugh. Is there no way in which the country could acknowledge the long services and brave career of such a friend and benefactor?

Since George's time humour has been converted. Comus and his wicked satyrs and leering fauns have disappeared, and fled into the lowest haunts; and Comus's lady (if she had a taste for humour, which may be doubted) might take up our funny picture-books without the slightest precautionary squeamishness.

What

What can be purer than the charming fancies of Richard Doyle? In all Mr. Punch's huge galleries can't we walk as safely as through Miss Pinkerton's school-rooms? And as we look at Mr. Punch's pictures, at the Illustrated News pictures, at all the pictures in the book-shop windows at this Christmas season, as oldsters, we feel a certain pang of envy against the youngsters—they are too well off. Why hadn't *we* picture-books? Why were we flogged so? A plague on the lictors and their rods in the time of Plancus!

And now, after this rambling preface, we are arrived at the subject in hand—Mr. John Leech and his 'Pictures of Life and Character,' in the collection of Mr. Punch. This book is better than plum-cake at Christmas. It is an enduring plum-cake, which you may eat and which you may slice and deliver to your friends; and to which, having cut it, you may come again and welcome, from year's end to year's end. In the frontispiece you see Mr. Punch examining the pictures in his gallery—a portly, well-dressed, middle-aged, respectable gentleman, in a white neckcloth, and a polite evening costume—smiling in a very bland and agreeable manner upon one of his pleasant drawings, taken out of one of his handsome portfolios. Mr. Punch has very good reason to smile at the work and be satisfied with the artist. Mr. Leech, his chief contributor, and some kindred humorists, with pencil and pen have served Mr. Punch admirably. Time was, if we remember Mr. P.'s history rightly, that he did not wear silk stockings nor well-made clothes (the little dorsal irregularity in his figure is almost an ornament now, so excellent a tailor has he). He was of humble beginnings. It is said he kept a ragged little booth, which he put up at corners of streets; associated with beadles, policemen, his own ugly wife (whom he treated most scandalously), and persons in a low station of life; earning a precarious livelihood by the cracking of wild jokes, the singing of ribald songs, and halfpence extorted from passers by. He is the Satyric genius we spoke of anon: he cracks his jokes still, for satire must live; but he is combed, washed, neatly clothed, and perfectly presentable. He goes into the very best company; he keeps a stud at Melton; he has a moor in Scotland; he rides in the Park; has his stall at the Opera; is constantly dining out at clubs and in private society; and goes every night in the season to balls and parties, where you see the most beautiful women possible. He is welcomed amongst his new friends the great; though, like the good old English gentleman of the song, he does not forget the small. He pats the heads of street boys and girls; relishes the jokes of Jack the costermonger and Bob the dustman; good-naturedly

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spies out Molly the cook flirting with policeman X, or Mary the nursemaid as she listens to the fascinating guardsman. He used rather to laugh at guardsmen, 'plungers,' and other military men; and was until latter days very contemptuous in his behaviour towards Frenchmen. He has a natural antipathy to pomp, and swagger, and fierce demeanour. But now that the guardsmen are gone to war, and the dandies of 'The Rag'—dandies no more—are battling like heroes at Balaklava and Inkermann by the side of their heroic allies, Mr. Punch's laughter is changed to hearty respect and enthusiasm. It is not against courage and honour he wars: but this great moralist—must it be owned?—has some popular British prejudices, and these led him in peacetime to laugh at soldiers and Frenchmen. If those bulking footmen who accompanied the carriages to the opening of Parliament the other day, would form a plush brigade, wear only gunpowder in their hair, and strike with their great canes on the enemy, Mr. Punch would leave off laughing at Jeames, who meanwhile remains among us, to all outward appearance regardless of satire, and calmly consuming his five meals per diem. Against lawyers, beadles, bishops and clergy, and authorities, Mr. Punch is still rather bitter. At the time of the Papal aggression he was prodigiously angry; and one of the chief misfortunes which happened to him at that period was that, through the violent opinions which he expressed regarding the Roman Catholic hierarchy, he lost the invaluable services, the graceful pencil, the harmless wit, the charming fancy of Mr. Doyle. Another member of Mr. Punch's cabinet, the biographer of Jeames, the author of the Snob Papers, resigned his functions on account of Mr. Punch's assaults upon the present Emperor of the French nation, whose anger Jeames thought it was unpatriotic to arouse. Mr. Punch parted with these contributors: he filled their places with others as good. The boys at the railroad stations cried Punch just as cheerily, and sold just as many numbers, after these events as before.

There is no blinking the fact that in Mr. Punch's cabinet John Leech is the right-hand man. Fancy a number of Punch without Leech's pictures! What would you give for it? The learned gentlemen who write the work must feel that, without him, it were as well left alone. Look at the rivals whom the popularity of Punch has brought into the field; the direct imitators of Mr. Leech's manner—the artists with a manner of their own—how inferior their pencils are to his in humour, in depicting the public manners, in arresting, amusing the nation. The truth, the strength, the free vigour, the kind humour, the John Bull pluck and spirit of that hand are approached by no competitor.

competitor. With what dexterity he draws a horse, a woman, a child! He feels them all, so to speak, like a man. What plump young beauties those are with which Mr. Punch's chief contributor supplies the old gentleman's pictorial harem! What famous thews and sinews Mr. Punch's horses have, and how Briggs, on the back of them, scampers across country! You see youth, strength, enjoyment, manliness in those drawings, and in none more so, to our thinking, than in the hundred pictures of children which this artist loves to design. Like a brave, hearty, good-natured Briton, he becomes quite soft and tender with the little creatures, pats gently their little golden heads, and watches with unfailing pleasure their ways, their sports, their jokes, laughter, caresses. *Enfants terribles* come home from Eton; young Miss practising her first flirtation; poor little ragged Polly making dirt pies in the gutter, or staggering under the weight of Jacky, her nurse-child, who is as big as herself—all these little ones, patrician and plebeian, meet with kindness from this kind heart, and are watched with curious nicety by this amiable observer.

We remember, in one of those ancient Gillray portfolios, a print which used to cause a sort of terror in us youthful spectators, and in which the Prince of Wales (His Royal Highness was a Foxite then) was represented as sitting alone in a magnificent hall after a voluptuous meal, and using a great steel fork in the guise of a toothpick. Fancy the first young gentleman living employing such a weapon in such a way! The most elegant Prince of Europe engaged with a two-pronged iron fork—the hero of Britannia with a *bident*! The man of genius who drew that picture saw little of the society which he satirised and amused. Gillray watched public characters as they walked by the shop in St. James's Street, or passed through the lobby of the House of Commons. His studio was a garret, or little better; his place of amusement, a tavern-parlour where his club held its nightly sittings over their pipes and sanded floor. You could not have society represented by men to whom it was not familiar. When Gavarni came to England a few years since—one of the wittiest of men, one of the most brilliant and dexterous of draughtsmen—he published a book of *Les Anglais*, and his *Anglais* were all Frenchmen. The eye, so keen and so long practised to observe Parisian life, could not perceive English character. A social painter must be of the world which he depicts, and native to the manners which he portrays.

Now, any one who looks over Mr. Leech's portfolio must see that the social pictures which he gives us are authentic. What comfortable little drawing-rooms and dining-rooms, what snug libraries we enter; what fine young-gentlemanly wags they

are, those beautiful little dandies who wake up gouty old grand-papa to ring the bell; who decline aunt's pudding and custards, saying that they will reserve themselves for an anchovy toast with the claret; who talk together in ball-room doors, where Fred whispers Charley—pointing to a dear little partner seven years old—'My dear Charley, she has very much gone off; you should have seen that girl last season!' Look well at everything appertaining to the economy of the famous Mr. Briggs: how snug, quiet, appropriate all the appointments are! What a comfortable, neat, clean, middle-class house Briggs's is (in the Bayswater suburb of London, we should guess, from the sketches of the surrounding scenery)! What a good stable he has, with a loose box for those celebrated hunters which he rides! How pleasant, clean, and warm his breakfast-table looks! What a trim little maid brings in the top-boots which horrify Mrs. B.! What a snug dressing-room he has, complete in all its appointments, and in which he appears trying on the delightful hunting-cap which Mrs. Briggs flings into the fire! How cosy all the Briggs party seem in their dining-room, Briggs reading a *Treatise on Dog-breaking* by a lamp; Mamma and Grannie with their respective needleworks; the children clustering round a great book of prints—a great book of prints such as this before us, which, at this season, must make thousands of children happy by as many firesides! The inner life of all these people is represented: Leech draws them as naturally as Teniers depicts Dutch boors, or Morland pigs and stables. It is your house and mine: we are looking at everybody's family circle. Our boys coming from school give themselves such airs, the young scapegraces! our girls, going to parties, are so tricked out by fond mammas—a social history of London in the middle of the nineteenth century. As such future students—lucky they to have a book so pleasant—will regard these pages: even the mutations of fashion they may follow here if they be so inclined. Mr. Leech has as fine an eye for tailory and millinery as for horse-flesh. How they change those cloaks and bonnets! How we have to pay milliners' bills from year to year! Where are those prodigious *châtelaines* of 1850 which no lady could be without? Where those charming waistcoats, those 'stunning' waistcoats, which our young girls used to wear a few brief seasons back, and which cause 'Gus, in the sweet little sketch of 'La Mode,' to ask Ellen for her tailor's address! 'Gus is a young warrior by this time, very likely facing the enemy at Inkermann; and pretty Ellen, and that love of a sister of hers, are married and happy let us hope, superintending one of those delightful nursery scenes which our artist depicts with such tender humour.

Fortunate

Fortunate artist, indeed! You see he must have been bred at a good public school; that he has ridden many a good horse in his day; paid, no doubt, out of his own purse for the originals of some of those lovely caps and bonnets; and watched paternally the ways, smiles, frolics, and slumbers of his favourite little people.

As you look at the drawings, secrets come out of them,—private jokes, as it were, imparted to you by the author for your special delectation. How remarkably, for instance, has Mr. Leech observed the hair-dressers of the present age! Look at ‘Mr. Tongs,’ whom that hideous old bald woman, who ties on her bonnet at the glass, informs that ‘she has used the whole bottle of Balm of California, but her hair comes off yet.’ You can see the bear’s grease not only on Tongs’ head but on his hands, which he is clapping clammily together. Remark him who is telling his client ‘there is cholera in the hair;’ and that lucky rogue whom the young lady bids to cut off ‘a long thick piece’—for somebody, doubtless. All these men are different, and delightfully natural and absurd. Why should hair-dressing be an absurd profession?

The amateur will remark what an excellent part hands play in Mr. Leech’s pieces: his admirable actors use them with perfect naturalness. Look at Betty, putting the urn down; at cook, laying her hands on the kitchen table, whilst her policeman grumbles at the cold meat. They are cook’s and housemaid’s hands without mistake, and not without a certain beauty too. The bald old lady, who is tying her bonnet at Tong’s, has hands which you see are trembling. Watch the fingers of the two old harridans who are talking scandal: for what long years past they have pointed out holes in their neighbours’ dresses and mud on their flounces. ‘Here’s a go! I’ve lost my diamond ring.’ As the dustman utters this pathetic cry, and looks at his hand, you burst out laughing. These are among the little points of humour. One could indicate hundreds of such as one turns over the pleasant pages.

There is a little snob or gent, whom we all of us know, who wears little tufts on his little chin, outrageous pins and pantaloons, smokes cigars on tobacconists’ counters, sucks his cane in the streets, struts about with Mrs. Snob and the baby (the latter an immense woman, whom Snob nevertheless bullies), who is a favourite abomination of Leech, and pursued by that savage humourist into a thousand of his haunts. There he is, choosing waistcoats at the tailor’s—such waistcoats! Yonder he is giving a shilling to the sweeper who calls him ‘capping;’ now he is offering a paletot to a huge giant who is going out in the rain. They

They don't know their own pictures, very likely ; if they did, they would have a meeting, and thirty or forty of them would be deputed to thrash Mr. Leech. One feels a pity for the poor little bucks. In a minute or two, when we close this discourse and walk the streets, we shall see a dozen such.

Ere we shut the desk up, just one word to point out to the unwary specially to note the backgrounds of landscapes in Leech's drawings—homely drawings of moor and wood, and sea-shore and London street—the scenes of his little dramas. They are as excellently true to nature as the actors themselves ; our respect for the genius and humour which invented both increases as we look and look again at the designs. May we have more of them ; more pleasant Christmas volumes, over which we and our children can laugh together. Can we have too much of truth, and fun, and beauty, and kindness ?

ART. IV.—*Psychological Inquiries : in a series of Essays, intended to illustrate the mutual relations of the Physical Organization and the Mental Faculties.* London, 1854.

WHEN such a man as Sir Benjamin Brodie is disposed to communicate his experiences—no range of query, less extensive than that which Sir Humphry Davy proposes to the unknown personage of his 'Consolations in Travel,' will satisfy him who hungers and thirsts after that most coveted of all knowledges—the knowledge of self ;—'Tell us what you *know*, or what you *believe*, or what others *imagine* they know.' The charm of works like the volume before us, consists in the intimate revelations of the mind of the author. Thoughts, conjectures, and sentiments, hazarded without reserve, are offered to the reader as to a friend, who does not expect that any of the various themes handled should be exhausted. It is sufficient that we have the authority of a gifted mind for the reasonableness of many of our beliefs.

The subject which Sir Benjamin has chosen includes in it almost everything relating to man : the structure of his frame, in so far as that may elucidate the inter-dependence of mind and body, is described ; the various phenomena, occurring in the sentient principle, with relation to the world within and the world without, are developed ; the influences of education and of habit are traced ; the scope of instinct glanced at ; and many a pregnant fact or suggestion is brought to bear on the mysteries of dreams, madness, and death. The form in which these multifarious

multifarious topics are treated is that of dialogue, presenting, it is true, none of the nicer touches of character in the speakers, in which the great masters of this style delighted, but offering instead, the subject matter itself under varying aspects; the physiologist unfolding, with unrivalled clearness, the intricacies of our organization; the metaphysician presenting us with the clear-obscure of mental operations, while the man of the world, by wise and timely comments, sifts the facts, for the purpose of bringing out their bearing on the currents of our daily life.

One or two questions relating to the working of the mind are discussed *in limine*, such as the source of mental fatigue, and the influence of mental inaction on health—

‘Where volition is exercised,’ says our author, ‘there is fatigue. There is none otherwise. The muscle of the heart acts sixty or seventy times in a minute, and the muscles of respiration act eighteen or twenty times in a minute for seventy or eighty, and, even in some rare instances, for a hundred successive years—but there is no feeling of fatigue. The same amount of muscular exertion, under the influence of volition, induces fatigue in a few hours. I am refreshed by a few hours’ sleep, for in dreamless sleep there is a suspension of volition.’—p. 10.

No doubt this view of the source of mental fatigue is true, when mental exertion is unassailed by the thousand cares and anxieties which beset us in the pursuits of life. Few of us can hope, however, for such a vista. Weariness of heart will overtake us; disappointments must occur. The conflict of existence cannot fail to call forth and rouse feelings, which singly, or in their totality, will prostrate the finest and firmest mental powers in utter lassitude. What a train of prosperous circumstances—what a calm and regulated mind—what a keen relish of life is implied, when, at the close of a long career, one can say that the sole source of mental fatigue is in volition!

The limit to mental work varies not only in various individuals, but according to the nature of the work itself. Johnson assigns eight hours a day as sufficient for study; Sir Walter Scott worked four or five. Mathematicians, and those who do not tax the imagination much, may, and do safely study ten or twelve hours daily. As a general proposition, it may be stated, that those studies which excite the feelings are those which can be least borne. On the other hand, the tranquil labours of the mind have a marked tendency to prolong life. ‘On meurt de Bêtise’ is perfectly true; the unemployed brain, like the unused muscle, decays and perishes quite as quickly as the overwrought organ. Berard, in his ‘Treatise on the Influence
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of Civilisation on Longevity,' shows the effect of brain-labour of an unexciting kind in those who are protected by an assured income from the inroads of care. He took at random the ages of 152 individuals, one-half of whom were members of the Academy of Sciences, the other half of the Academy of Inscriptions, and found that the average longevity of these mathematicians and antiquaries was 69 years! Sir Humphry Davy seems to have had in view those only who have 'battled' with life, when he states 'that there are few instances in this country of very eminent men reaching to old age. They usually fail, droop, and die, before they attain the period naturally marked for the end of human existence; the lives of our statesmen, warriors, poets, and even philosophers, offer abundant proofs of the truth of this opinion,—whatever burns, consumes—ashes remain.'—*Consolations in Travel*, p. 171. No one who had the happiness of knowing this extraordinary man will doubt an instant whence these suggestions sprang, and to whom they most eminently applied. Scott always asserted that Davy would have been a great poet had he not chosen to be a great philosopher. 'The excitement, and its consequent effect on the frame, must have been excessive in one of such impassioned imagination as Davy, at the moment when the truths, which have laid the foundations of modern chemistry, were dawning on him. Even the calm and tranquil intellect of Newton could not bear the blaze of light of his own approaching discoveries, as prostrated by its effulgence he gave over his calculations to a friendly hand to finish.

The symptoms betokening the approaching destruction of nervous power require to be early noticed, in order that the victim of an over-wrought brain may be snatched from a most miserable end. Among the first of these symptoms are vivid dreams, reproducing at night the labours of the past day, so that sleep affords no repose. The transition from the activities of a dreaming brain to a wakeful one is rapid; then follow restlessness and exhaustion, inducing a state wholly incompatible with the exertions required for the daily and pressing necessities of life. The mind, torn by conflicting feelings, becomes irritable, unstable, and melancholy: the tempered delights of a home cannot move—affection has no power to soothe—and the playful sunshine of childhood cannot warm the heart wasting and withering in decay, or the mind incapable alike of enjoyment or of labour. At this stage morbid fancies and dislikes cloud the feelings, or hallucinations disturb the brain; and then it is indeed a happy consummation to mental decay and reposeless anguish when the reduced and wasted frame, too feeble to withstand the ordinary vicissitudes

vicissitudes of the elements, succumbs to the inroads of some acute disease.

The robustest intellects have obscure intimations from internal and inscrutable sources of the necessity of repose, and it is precisely such minds which are disposed to disregard them. In others the same sensations are fancied, without so just a foundation, and the physician is called on to sanction the retirement of his patient from a successful public career, or from some engrossing pursuit or profession. The solution of the problem is not of slight difficulty, and a right judgment will only be attained by him who unites with technical knowledge some insight into character and some knowledge of the world. If the applicant should, by a happy hazard, have kept in hand during his career some favourite occupation or pursuit besides his profession, it is probable he may know his own mind, and his superfluous activities may find healthful occupation in their concentration on this bye-subject. If the peculiar cause whether bullocks or bucolics do not absorb and divert the mind—if the least trace of hankering after old haunts and habits is discovered—the pathic had better relinquish for the present all thoughts of ‘retiring to Westmoreland,’ under penalty of discovering, when too late, that he is perishing of a false definition of happiness.

But what is this essence which we call mind, which is so dependent on matter as to vary with the varying conditions of the brain? Every sound physiologist must admit that the ‘*commercium*’ of soul and body is so intimate, that probably no change can take place in the latter which is not felt in the former; also that no mental state exists without influencing the corporeal tissues. Granting this to the materialist, he is bound to prove that this connexion cannot subsist except under the category of substance and accident, in which mind is but a property of matter. Against such a doctrine our author raises his hand and voice, and bases his confutation of it on the following considerations:—Every one feels himself to be an indivisible percipient and thinking being—a primary truth which, like our belief in the external world, does not rest on nor admit of argument—which we cannot get rid of, and which, according to Father Buffier and Reid, constitutes the foundation of human knowledge. The author further states his inability to conceive the slightest resemblance between the known properties of matter and mental operations; the former existing in space, with which the latter have nothing to do. Further he agrees with Berkeley, that our knowledge of mind is of a much more positive kind than our knowledge of matter—we are sure of our mental existence—and we can conceive the existence of mind without matter; hence there
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is no absurdity in believing that they are not necessarily conjoined. Lastly the belief of mankind in the independent existence of spirit and in a future state is so universal, as to assume the aspect of an instinct. If this belief be instinctive, then the analogy of all other instincts would lead to the conclusion that this, like the rest, is directed to the attainment of some real end and object.

By most these arguments will need no further support; but we confess that they do not grapple with the real difficulties of the vexed question of materialism. The astonishing advances of physical science are such as to threaten to absorb all other sciences into its vortex. The chemist now can reproduce in the laboratory some of the products of the vital force, and many are ready in this class to look on life but as the result of chemical forces. Locke, when he says it might please God to make mind an attribute of matter, saw no absurdity in this correlation. Sir Isaac Newton surmises that thought may be a 'vibration.' Agreeing with Sir Humphry Davy when he characterises this dictum of Sir Isaac Newton as an 'idea which I would never embrace or give authority to,' still here are indubitable instances of the ablest men finding no difficulty in placing physical and mental phenomena under the common laws of matter; nor indeed is there, for the question of immortality is a pure question of Divine power.

It is not what we can conceive, but what is, is the point in this important subject; and we cannot but recommend our author, in revising his work in a future edition, to support his theme from that store of facts which no one possesses more abundantly than himself. In the interim we will lay before the reader the most recent discoveries of physiologists as to the structure and powers of the nervous system; and should it be found, from such a survey, that even the pantheist and the materialist is unable to trace a necessary connexion between the brain and the mind, some presumption, at least, on *positive* and not on speculative grounds of their separate existence, will be derived from the investigation.

The nervous system in man, and in animals allied in structure to man, consists of three parts—a brain, spinal marrow, and nerves. In the brain, the nervous matter is heaped up in convex masses; in the spine, it is gathered in a cylindrical shape; and from these so-called 'nervous centres,' the nerves, composed of an aggregation of very minute fibrils, as a skein is of threads, branch off, to be distributed to the various organs and structures of the body.

All nervous matter, however shaped, amassed or distributed, is found to consist only of two elementary substances—a white,
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or medullary, and a grey, or cineritious. The former is arranged in lines, and makes up the bulk of the nervous system; the latter, appearing as 'vesicles,' is sparingly scattered in the body, but nevertheless is *supposed* by modern physiologists to be the more important element, as originating all the active functions of nervous power. Under the microscope, the grey matter is found to be composed of nerve-cells, each cell containing within it several granules and one transparent nucleus. The cell and nucleus is of extraordinary significance in the doctrine of animated forms (morphology). The primordia of man is such a vesicle where all his faculties lie enclosed in the space of 1-200th part of an inch. From the external surface of the cell one to six threads sprout (Wagner says only and always four), giving to each an irregularly stellated appearance, and to the general mass of the cineritious substance the aspect of nerve-cells, immeshed in a fine reticulated tissue.

The medullary fibril is found to be a tube consisting of an external transparent sheath, an internal fluid in the centre of which a solid thread runs longitudinally. This 'nerve-axis' seems to be of essential importance, since in some fibrils the fluid disappears or is replaced by granules, while the axis is always retained.

There is much uncertainty as to the mode of union between the grey and the white nervous elements. The general belief is, that the nerve-axis of the medullary fibril joins the nervous threads of the vesicle. Neither do we know with accuracy anything as to the peripheral terminations of the nerves. Kölliker, deservedly the highest authority on this point, acknowledges the impossibility of tracing a nerve from the surface to the centre—from the skin, for example, to the brain—an admission scarcely to be wondered at, if the extreme tenuity of the nerve-fibril be considered. Hartig finds 38,400 such fibrils in the sciatic nerve alone; and Rosenthal and Purkinje assign to each of three small nerves of the eye, 18,000, 2500, and 1200, respectively. One set of physiologists believe that each fibril is isolated, never joining another, and running from point to point in a line. Another set are of opinion that, as they do find the extremities of nerves looped, so the type of the nervous system is best represented by a curve, like that of the vascular. The free or linear termination has, it is said, been positively demonstrated as existing in the skin and muscles of the frog, in the muscles of some fish, and in the electric organs of the torpedo. In man and in mammals no such anatomical arrangement, however, is discoverable.

Our knowledge of the chemical composition of nervous matter is

is nearly nil. Men of the highest mark have hitherto failed to trace chemical differences in the different nerves of the body. Some of the acids and other constituents of fat, together with a large amount of the combinations of phosphorus, are all the results which are given by the ablest chemists from the analysis of the brain. And even here they confess their entire ignorance of the relation of these substances to each other.

We stumble, therefore, in our laborious groping for knowledge, on a most unexpected conclusion—that all the various functions of man as a sentient and intellectual being, and all the other phenomena of his body depending on nervous influence, are not founded on any essential differences discoverable either in the anatomical structure or chemical composition of the nervous matter. The nerve regulating a secretion is similar to the nerve subservient to vision: Like the wires of a telegraph, the material elements may be the same, the element pervading them may be similar in all, but the arrangement is *designed* by a power which uses and governs the one and the other.

It is in the varying arrangements of the same nervous matter that we do find something like a clue to the conditions of varying function. But here we are again lost in conjecture. For, though such arrangements are obtruded on us in some of the nerves of the special senses, as on those of the eye and ear, yet no anatomist or chemist has found any peculiarity, except in size, distinguishing a nerve subservient to feeling from the nerve originating motion, or both, from the fibrils of the brain, the instruments of intellectual and moral manifestations.

As the mere form and composition of nervous matter will not account for its different properties, perhaps the study of these properties or functions may throw some light as to their nature and origin. This at least appears certain, from the above investigations, that the nervous centres and the nerve-fibrils are very composite structures; and the general conclusion which modern physiology has attained to, is, that separate tracts of nervous matter have separate powers; so distinct are they, that, in spite of anatomical similarity, the powers inherent to one tract cannot be assumed by another. It is, however, only of the lower faculties of man—namely, those pertaining to sensation and motion—that we have positive knowledge; of the place and material seat of his higher endowments we know nothing.

The various nerves of the body subserving to animal or soul life (we designedly omit all consideration of the nerves of organic or vegetative life) are classified under the heads—1. Of nerves of special sense; 2. Nerves of general sensation; 3. Nerves of motion.

motion. They have this property in common, that they all proceed from limited centres of power, either in the brain or in the spinal marrow, which centres being destroyed, the function pertaining to them instantly ceases. Little need be said at present as to the miracles of the special senses. Man is connected with myriads of worlds, infinitely distant, by a tract of nervous matter not four inches long. A still less mass of nervous substance receives the vibrations of another fluid, by means of which the subtlest of existences intercommunicate in the commerce of soul with soul. The finer properties of matter dependent on liquidity are appreciated by the tongue; those impalpable and invisible emanations which escape the other senses reveal their existence to the olfactory nerves; while the sense of touch gives us the certainty of body and substance, of nearness and contact, without which existence might be but a dream.

It is to Sir Charles Bell that we owe the greatest of modern discoveries on the nervous system, the discovery of the very paths by which sensation and volition travel. The nerves of sensation spring from the two posterior columns of the spinal marrow, while the nerves of motion arise out of the two anterior columns. The two sets of fibres or roots remain separate in the immediate vicinity of the spine, but soon are packed into one common sheath to be distributed to their respective organs. If the roots of the nerves inserted in the anterior columns of the spine are cut, no pain is felt, but all power of moving the limb receiving these nerves is gone; that part of the body is, in short, palsied—sensation, however, remaining perfect. If the roots arising from the posterior columns be divided, intense pain is felt for an instant, followed by perfect loss of sensation in the parts supplied by the nerve, the power of motion remaining entire. If the sheath containing within it both kinds of nervous fibril be cut, sensation and motion are both lost. The current exciting sensation flows from the circumference to the centre, i. e. from the skin to the brain and spine; the current originating motion flows in the reverse order. Though the seat of these wonderful agencies is chiefly in the spine, and is there most readily demonstrable, still there are many spots in the brain which seem to possess these respective properties; it is supposed, therefore, that the nerve-fibrils of the spine, administering to motion and sensation, terminate in the brain.

Dr. Marshall Hall discovered another property of the spinal marrow. He remarked that if the foot of a decapitated frog was pinched, the animal withdrew the limb. Here, where there was no brain either to feel the pain or to will the motion, it was surmised

surmised that the current in the nerve of sensation was carried to the spine, and that that organ 'reflected' the excitement on the nerve of motion rooted in it; hence these phenomena obtained the name of 'reflex functions' of the spine. Coughing, sneezing, the laughter occasioned by tickling, are instances of 'reflex action,' where the irritation of a nerve of sense compels a large class of muscles to involuntary movement.

In the instance of a brainless infant, which lived a short time and suckled, as described by Mr. Lawrence, is another example of reflex function: the spine, receiving from the nerves of the stomach the impulses of appetite, and transmitting the impression to the nerves of the muscles, co-ordinated for the purposes of suckling. It is found that the merest fraction of the spinal marrow connecting the nerve of sensation with the nerve of motion is sufficient for the production of the effects just noticed.

A correct theory of the phenomena of reflex action is still a desideratum; for we know not only that the excitement of a nerve of sensation is propagated to a nerve of motion, but that that of a sensitive nerve will pass to a sensitive, and of a motor nerve to a motor. The material organs by which these actions are combined, are still undiscovered.

Within the last eighteen months Auerbach and Pflüger have attempted to prove that the spine is possessed of 'consciousness;' their experiments tending to show that nothing short of such [a wild] assumption will account for the very methodical way in which decapitated animals avoid injury. The learned and judicious Valentin, though he abjures the above-mentioned theory, thinks nevertheless that the spine may be the material seat of instinctive action.

In our previous investigation we were unable to trace the varying functions of the nervous system to any anatomical or chemical arrangement or peculiarity. In our present analysis of the discovery of Bell and Marshall Hall, we find that the *size* or mass of nervous matter bears no direct proportion to its power, a very minute portion of the spinal substance sufficing to generate the phenomena of reflex function. This holds good as to the brain. If a spot only one-twelfth of an inch in breadth, situated at the point of the '*calamus scriptorius*,' be injured, death is instantaneous. A little on one side of this 'life knot' Bernard inserted a needle in a rabbit's brain without interfering with respiration or any other important vital function; but the animal eliminated sugar from its system so long as the irritation was kept up by the needle, and no longer. Within a few lines of these two points is a third, giving origin to the *nervus vagus*, to which if an electric current be applied, the heart ceases to beat.

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Here we have three distinct centres of power, originating in very minute portions of nervous matter: injury to the first destroying life with the rapidity of lightning; injury to the second as rapidly changing the complicated elaborations of vital chemistry; while irritation of the third centre brings the never-ceasing action of the most enduring muscle of the body, the heart, to a standstill. The inferences from facts like these are fatal to phrenology; size and power are no longer necessarily connected. When the phrenologist assumes that a certain mass of the brain is the seat of some single faculty, as that of Ideality, is he quite sure that the simple organ is not after all a compound one, containing many granules originating different powers? What ratio is there between the faculties of the bee or ant and their nervous mass? If the objection be met as the phrenologist does meet it, by the statement that not the size only but the energy of the so-called cerebral organ is to be taken into consideration, he at once destroys the practical value of his system, for who shall estimate the amount of energy in the brain by an examination of the skull? We must not, however, linger over this most baseless and unscientific of systems, to which not a single anatomist of note has ever given his adhesion. Sir Benjamin has detected two fatal flaws in the anatomical foundations of this pseudo-science, which, as they are fundamental errors, we must quote—

‘Now, there are two simple anatomical facts which the founders of this system have overlooked, or with which they were probably unacquainted, and which of themselves afford a sufficient contradiction of it.

‘1st. They refer the mere animal propensities chiefly to the posterior lobes, and the intellectual faculties to the anterior lobes of the cerebrum. But the truth is that the posterior lobes exist only in the human brain, and in that of some of the tribe of monkeys, and are absolutely wanting in quadrupeds. Of this there is no more doubt than there is of any other of the best-established facts in anatomy; so that, if phrenology be true, the most marked distinction between man, on the one hand, and a cat, or a horse, or a sheep, on the other, ought to be, that the former has the animal propensities developed to their fullest extent, and that these are deficient in the latter.

‘2ndly. Birds have various propensities and faculties in common with us, and in the writings of phrenologists many of their illustrations are derived from this class of vertebral animals. But the structure of the bird's brain is essentially different, not only from that of the human brain, but from that of the brain of all other mammalia. In order that I may make this plain, you must excuse me if I repeat what I said on the subject formerly. In the mammalia, the name of *corpus striatum* has been given to each of two organs of a small size compared with that of the entire brain, distinguished by a peculiar disposition of the

the grey, and the fibrous, or medullary substance, of which they are composed, and placed under the entire mass of the hemispheres of the cerebrum. In the bird's brain, what appears to a superficial observer to correspond to these hemispheres is found, on a more minute examination, to be apparently the *corpora striata* developed to an enormous size; that which really corresponds to the cerebral hemispheres being merely a thin layer expanded over their upper surface, and presenting no appearance of convolutions. It is plain, then, that there can be no phrenological organs in the bird's brain corresponding to those which are said to exist in the human brain, or in that of other *mammalia*. Yet birds are as pugnacious and destructive; as much attached to the localities in which they reside, and as careful of their offspring, as any individual among us; and I suppose that no one will deny, that if there be special organs of tune or of imitation in man, such organs ought not to be wanting in the bullfinch and parrot.'—pp. 223-225.

The principle of Bell, that certain tracts of nervous matter have certain functions, has induced the physiologist to endeavour to trace the seats of the higher powers of the soul to definite parts of the brain. The methods adopted by him have the advantage of being positive, and they may be reduced to three:—

1st. *Vivi-section*, or the removal of portions of a living brain in animals with a view of ascertaining what psychical faculties disappeared as a consequence of such abstraction.

2ndly. By observing the connexion of local disease of the brain, and the loss of certain mental faculties.

3dly. By comparing the faculties of animals with the development of the brain in the various classes of the animal kingdom. Of this last method Volkman, a most competent authority, thus speaks:—

'In descending from the higher and more perfect cerebral organization to the lower, in the animal kingdom, we find portion after portion of the brain disappear, without our being able to trace as a consequence the loss of a single mental faculty. Thus, in *mammalia*, the convolutions of the brain and the posterior hemispheric lobes gradually vanish; in birds, the Pons, and the Corpus Callosum; in *amphibia*, the Fornix—without our being able to find that "the soul" has lost any one of its faculties.'—v. *Wagner's Wörterb., art. Gehirn.*

With regard to the second method, or the deductions arising from the observations of disease of the brain, the conclusions are equally unsatisfactory and uncertain; for local disease is rarely so limited as not to excite neighbouring parts; and there are no marks by which we can distinguish one organ from another in the substance of the brain. The innumerable dissections of the brain of lunatics bring out in a most salient form the conclusion that there is no constant connexion between mania and disease of

of the brain. Whenever any portion of that organ has been pointed out by the theorist as the especial seat of madness, a hundred cases are soon collected proving that mania does not occur with destruction of the specified part, and does occur when that part is in its full integrity. More than two-thirds of the cases of madness are, as Romberg states, the result of alteration in the blood.

With regard to the method of excision, or vivi-section, it may be said that the conclusion must be uncertain, when we consider our inability to limit the injury inflicted to the portion of brain excised: the nervous shock, the loss of blood, the cooling and exposure of the brain, complicate the experiment and vitiate therefore the deduction.

Nevertheless, the hunt after the seat of the soul has been most pertinaciously pursued: and, as Ludwig has summed up the general result for each part of the brain, we shall quote his conclusions in preference to our own.

1. *The Cerebral Lobes.*—All three methods make it highly probable that there is a relation between the development of the higher intellectual faculties and that of the cerebral lobes, for excision of these parts in birds, their deficiency in monsters, or their deterioration from innutrition, is followed by stupefaction. Opposed to these facts, however, are others, where large masses of the cerebral lobes of man were lost or were diseased, or failed congenitally, without entailing the slightest deficiency of intellect. If the connexion between the 'soul' and the cerebral lobes were necessary and essential, such a result would manifestly be impossible. To say that the residuary portions of the brain assumed the functions of the lost or diseased parts, is simply to hazard a vague assertion. The contradictory facts might be reconciled by supposing that a certain part only of the cerebral lobes was the seat of the soul; and this has been claimed by one set of observers for the posterior lobes, while others have fixed on the anterior. The opposing claims and facts neutralize each other, and destroy both hypotheses.

2. *The Commissures and the Corpus Callosum.*—Death generally takes place rapidly after injury to these parts. Sometimes however this is not the case, especially when these parts are merely diseased. The corpus callosum has in several instances been wanting, without entailing any deficiency in the faculties of consciousness, sensation, and motion. The 'reason' was generally disturbed after injury to these parts, but not always; and as the power of thought is equally affected by lesion of other parts of the brain, so that faculty cannot be said to be dependent on

the integrity of those portions of the brain under present consideration.

3. The Cerebellum.—To this organ has been assigned, 1. the power of sensation; 2. that of co-ordinating muscles, so as to regulate the movements of the body; 3. that of being the seat of the animal passions. All these hypotheses have been swept away by the fact that the functions so ascribed to the cerebellum have remained intact and entire, after innumerable authenticated injuries of this organ; and, in a remarkable instance, after its congenital deficiency.

4. The Pons.—After the removal of the cerebral hemispheres some animals are frightened by noise, or shut their eyes to excessive light, and others cry when a sensitive nerve is pinched (the 5th). Hence Longet believes that the seat of sensation is below these parts and in the pons. If this were certain, the inference would point at once to the composite nature of the soul, sensation being in one portion of the brain and intellect in another. But all our experience of man thoroughly refutes this assumption of Longet; for how often does extravasation of blood, in parts above the pons, cause loss of sensation, although the paralyzed nerve remains in direct connexion with this uninjured (supposed) seat of the sensitive faculty?

Among all the uncertainties of these facts this one conclusion stands firm, that none of the organs we have enumerated generate the functions of the soul, in the same sense as a muscle may be said to cause the movement of one bone on another.—*Ludwig, Physiologie der Menschen*, p. 454.

So then, after a perfectly endless number of cruel operations on the brains of the lower animals—after innumerable dissections of diseases of that organ in man—after a large view of animated nature as to the connexion between organization and thought—we have the authority of a profound physiologist, armed with all the weapons of modern investigation, wielded, if report be true, without any scruples on religious grounds, for asserting that neither anatomist, microscopist, pathologist, nor the comparative anatomist, can unearth the soul from its pulp. We are once again thrown from the domain of positive knowledge on the wide sea of conjecture, to steer by the poor light of philosophy to what haven we may. Thrice happy they who have no need of its miserable shimmer, and can look to that loadstar for the purer and more certain ray, which never misdirects, and is never obscured.

Let us premise, before we plunge into the mare-magnum of metaphysics, this one 'caveat' for the reader's sake, viz., a great deal

deal more may always be said on what we do not know, than on what we do. Truth is a grain, error a mass; but the mass often encloses the precious particle, which is discovered only by him who will patiently sift it, throwing nothing aside until he is satisfied of its worthlessness.

Seeing the difficulty, nay, the impossibility of finding the local habitation of the most wonderful of created essences, philosophers of all ages and creeds have been induced to view the soul as an 'emanation,' 'a gift,' 'an insufflation,' from an independent self-subsisting source; and this source was either the ever-living God of the theist, or the eternal nature of the pantheist. In both creeds the brain was but the instrument and seat of the soul, just as the iron is the medium of magnetic influences, and amber that of electric manifestations. The schoolmen, knowing that everything must be 'somewhere,' classified existence in space under the general term of the Ubieties, of which there were three — the ubiety repletive, the ubiety definitive, and the ubiety circumscriptive. The first pertained to the Deity, filling all space with his providential power—to spiritual natures, including the soul, was allotted definite space for their operations, the exact or exclusive spots of such operative influence being indeterminable. Matter, so far as it is embodied and capable of being *circumscribed* by points, came under the third head of 'Ubiety circumscriptive.' No one among the refined pantheistic materialists of our day dreams of ranging the soul under the category of embodied matter. Our emotions do not describe eccentric curves, our sensations are not cubic; the chain of a compact argument does not consist of elliptic or circular links, nor its weight of some fraction of the pound troy, except indeed to the inmates of Bedlam. It is not in such absurdities that the modern pantheist takes refuge, nor does he acknowledge even that the connexion between thought and brain is on a level with that between bile and liver; he does not believe that Milton from the glands of his brain secreted the *Paradise Lost*. The range of the pantheistic argument tends to show how certain substances, throwing off the attributes of common matter as weight and form, appear in the universe as 'forces' endowed with such wonderful laws and properties, that the addition of thought and consciousness seems to be within their nature, and only awaiting an *experimentum crucis* to demonstrate their existence as attributes.

The theist and pantheist meet therefore only on one point, viz. in considering the soul as an efflux or manifestation of a power existing out of, though operating through the brain. Victor Cousin, in his analysis of 'Reason,' considers that faculty

as revealed to man by Deity—‘the light that enlightens every man coming into the world.’ We are passive in its reception—we can no more help being convinced than we can help seeing with the open eye. No effort of our will can make a thing more or less true or reasonable. The truth flashes on us, and we must perforce receive it. The laws of reason are the laws of God made manifest in the universe, regulating the development of the species not less than that of the individual, governing alike the movements of bodies and the march of nations, seen no less conspicuously in physical order than in historic development. The reason, continues Cousin, is impersonal—it is no more my reason or my truth than it is yours—the person, the Ego, the ‘self,’ is the will; every act of will being so inseparable from the person, that an impersonal volition is a contradiction in terms. It is ever *my* will—my free will—the will is the only foundation of the moral law, giving to man the freedom of choice between good and evil, and the power of acting in conformity with or against the immutable laws of reason. There are some noble passages strewed among the leaves of Sir Humphry Davy’s *Consolations in Travel*, in which intimations, not dissimilar to the views of Cousin, are stated with great eloquence and feeling.

The basis of modern pantheism is founded on the astonishing discoveries of physics. The investigations as to the properties of heat, light, electricity, and galvanism, soon proved that these agents were unlike common matter, as being without appreciable form or weight, and, in a certain sense, as taking no room. When their affinities were traced, a gigantic hypothesis was put forth, that all of these supposed substances might, after all, be but vibrations of an unknown ætherial fluid filling the universe. The absolute necessity of some of the imponderable agents for the development of life, afforded a sufficient ground for surmising analogies in the nature of the vital force with that of the ætherial substance. From an imponderable unconscious force to the manifestations of life in all its gradations, from the vital force to the awakening first of irritability, and from that to consciousness, appeared to be to Oken and Schelling but links in a series which they in their works have certainly endeavoured to trace with profound talent. The doctrine spread largely and penetrated deeply into the feelings of society through the medium of the delicious poetry of Goethe. The animal magnetist thought he found a scientific basis for his miracles in this ætherial substance, which being the common bond of all natures, uniting all with all, accounted for distant influences and wonderful manifestations, by peculiar and hazy generalisations. The foundations of some of the many forms of socialism are also laid in these

these ideas of naturalism. Humanity (which must not be confounded with benevolence) is a force in constant development; men are but the leaves which perish and are renewed, but humanity is the tree which ever flourishes and perfects itself: as the tree cannot retrograde to the germ, neither can the various forms of the past state of man be reproduced. Progression to perfection is the watchword, destruction of the lingering monuments of the past the means.

Society, therefore, and not the individual, is the progressive force, and as its powers are manifested in the masses, so the masses and not the few are the real objects of vital importance. Civilisation has only compressed the life of the masses—civilisation in all its forms must be abolished, that the many may attain to their fullest development. The astonishing revolution of 1848 revealed the extent and depth of faith in these doctrines, by showing to prostrate Europe that almost every one of her thrones of power were in one hundred days in the grasp of socialistic leaders.

The expansion of these ideas exists in a vast literature put forth by a host of talented minds—by Thierry, Michelet, George Sand, Eugène Sue, Proudhon in France; by the disciples of Hegel in Germany. Socialism has furnished its historians, novelists, statisticians, and economists, requiring such men as Dupin, Bastiat, and Thiers to combat their arguments, and Napoleon III. to silence them. M. Comte, a profound mathematician, and Littré, one of the most learned Hellenists of the day, have carried the doctrine of the *être concrète*, or humanity, to its highest point of absurdity by the publication of a calendar, in which certain days are set apart for the worship of Hume, Cuvier, Mozart, Homer, Wheatstone, and some 365 saints, in their characters of ‘intense incarnations’ of the human *force*.

However, let us descend from these to the drivelling materialist of physiology, who seeks to prove that nervous power is some modification of electricity.

This question, which has long been hanging over us, is now likely to be solved. There is not the slightest doubt that the shock of the torpedo, and some other fish, is due to the discharge of the electric fluid. Electricity is used, therefore, by the nervous power in these animals.

It is a general law, demonstrated by Faraday, that no chemical change can take place without the disengagement of the electric fluid; and as the functions of secretion, nutrition, and reparation are all instances of vital chemistry, it follows that a vast amount of electricity must be set free in the living body. What becomes
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of it? Matteucci has traced a constant current of electricity from the muscles to the skin, which is independent of the nerve. It was reserved for Dubois Reymond, of Berlin, to demonstrate that there is such a current in the nerve, so essential to it, that whatever interferes with its existence interferes with the functions of that nerve. Helmholtz has measured moreover the velocity of the electric current in the nerve, and estimates it at 61·5 metres, or about 193 feet per second in the higher animals. This excessive retardation of the known velocity of electricity (422 millions of metres per second) is ascribed to its indirect transmission through the resistant tissues. We give the general results of Dubois Reymond's discovery, so far as they bear on the question of the identity of the nervous and electric forces:—

1. The source of the electricity in the nerve is in the chemical changes induced whenever the nerve is excited (such is Ludwig's opinion).

2. The negative pole of the current is in the longitudinal; the positive in the transverse direction of the nerve.

3. The electric current may be propagated with equal facility in the same nerve, either from the nervous centres to the circumference, or the reverse; so that every nerve transmits the electric fluid in both directions.

4. Whatever be the function of the nerve, the electric current is the same in all; no difference of electric effect being discernible between the nerve of sensation and the nerve of motion, nor between the white medullary and the grey vesicular substance. (Eckhard, p. 42, *Nervous System*.)

5. The electric constitution of the muscular fibre is very similar, if not identical, with that of the nerve. (Ludwig, p. 35-2, and Eckhard.)

If the above general conclusions and facts be weighed, the notion of the identity of the nervous power with the electric must be abandoned. Electricity, like almost every other force of nature, is largely used in the economy of organisation. In the torpedo and gymnotus it becomes a most formidable weapon of defence, placed under the nervous power, to be wielded at will. The apparatus generating the electric fluid in some of these animals may be excited by heat or pressure for some time after it has been severed from the body of the creatures. We find that not only every class of nerves has the same electric constitution, but that the constitution of the muscle and the nerve are in this respect identical. Moreover, we detect electric currents in tissues where there can be no question of nervous power. Something more than the part of a nerve-excitor played by the electric fluid
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is requisite to account for the phenomena of even the lower faculties of the soul, namely, sensation, as the following admirable analysis of Ludwig abundantly proves:—

‘Nerve excitation (by chemical, mechanical, or electric irritants) and sensation are not the same things:

‘1. Because all nerves are excitable, though only a few are capable of inducing sensation.

‘2. Even these will not produce sensation if any point of their course is injured between their ending in the external parts of the body and their real or virtual termination in the inner parts of the brain, viz., in the thalami and middle lobes. We know that though under these circumstances no sensation is possible, yet excitation goes on so as to allow the production of all the phenomena of reflex function.

‘3. Even if there be no injury to a nerve of sense, yet no sensation is produced unless the attention, *i. e.* something that attends, is roused. The eye and ear are hourly plied with a thousand waves of air and light, which remain unnoticed and unfelt till the *mind* attends. It follows that another element than a nerve-excitor must be added to eke out a sensation.

‘4. A fourth element arises during the production of a sensation, which cannot by any process be resolved into a nerve-excitor, namely, an *idea*. All our sensations are accompanied by the idea of “*ontness*,” or externality. The excitement must be conveyed to the thalami and middle lobes of the innermost portions of the brain to be *felt*. Yet we refer all our sensations to some part out of and beyond those cerebral portions, on the integrity of which these sensations depend.

‘5. When the organs of sense are closed to their natural stimuli in sleep, the whole play of life is re-acted in our dreams, making the inference certain that the nerves excite the mind—but are not the mind—just as mechanical stimuli excite the nerve, and are not the nervous power.’ Ludwig, *Physiol.*, p. 440.

These views had long ago been anticipated by Davy:—

‘Now that the progress of science (says he) has opened new and extraordinary views in electricity, these views are not unnaturally applied by speculative reasoners to solve some of the mysterious and recondite phenomena of organized beings; but the analogy is too remote and incorrect. The sources of life cannot be grasped by such machinery. To look for them in the powers of electro-chemistry is seeking the living among the dead. That which touches, will not be felt; that which sees, will not be visible; that which commands sensation, will not be their subject.’—*Consol. in Travel*, p. 202.

In this branch of natural philosophy—rightly named ‘*nerve-physics*’ by the laborious, conscientious, and profound physiologists of Germany—as in every other, proceed where we will, unravel what we may, we approach at last the confines of an unknown sphere whose influence is felt, but felt to defy intrusion. Therein is the birth and the dwelling-place of those mysterious powers

powers which appear among us, enveloping and penetrating the universe with their wonderful and restless activities. The great of all ages have approached them with all the holy fervour of truth; but their subtle essences have eluded the outstretched arm, the prying eye, and the longing heart pining to intercommunicate. What are they—whence come they—whither do they go? If elementary, then are they simple; if simple, then perhaps immortal; for human experience sees dissolution only in compound substances. Of the laws and conditions of simple substance, the mind may glean something; but of its end and origin poor human reason knows nothing.

We may fairly conclude, and that on positive (not speculative) grounds unknown to the metaphysicians of past times, that the organisation is but the platform and instrument of mental powers which inhere in it; that while we know mind not to be matter, we are ignorant altogether as to its intimate nature. The psychologist must be content to study its laws, which are much elucidated by the facts which modern science has evolved as to the *mechanism* of sensation and perception.

We are told that the brain is a congeries of organs, which is true; but in addition we are informed that every separate faculty of the mind—imagination, memory, reasoning—has each its organ, which is yet to be proved. What, then, is an organ? With regard to the perception of external objects, three things are requisite: there must be an apparatus for receiving the impress of matter, a channel (the nerve) for transmitting the impression, and thirdly a spot within the brain in which it is perceived. Any one of these three portions of the material organ being destroyed, the function allotted to such organ instantly and for ever ceases. Thus vision is gone equally, whether the eyeball be destroyed or the nerve be injured, the eyeball remaining sound, or if the brain be diseased at that point where the optic nerve terminates, the eyeball and nerve remaining healthy.

The first law of sensation is that the same excitant is not capable of inducing the same sensation in every part of the same organ.

If light be applied to the trunk of the optic nerve instead of to the retina, no vision takes place. Helmholtz, who has invented an eye speculum enabling him to see the minute structure of the living eye, observed that when an image was cast on the small spot where the optic nerve penetrates the eye-ball, nothing but a confused sense of light was perceived. The celebrated Marriotte had proved by a very simple experiment that there was a blind spot in the eye termed the *macula nigra*, and he ascertained the relation of that spot to the axis of vision.

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His calculations being adopted by anatomists, it was discovered that the blind spot corresponded with the entrance of the optic nerve in the eye-ball. The modern investigations of Kölliker afford a further corroboration of the hypothesis that the nerve-fibril is merely a conductor of impression between the receiving and the perceiving parts of an organ. The film of nervous matter smeared over the inner concavity of the eye-ball, called the retina, is found to consist of no less than five different layers, the fibrils of the optic nerve being one of them. These fibrils fail in one spot of the retina, being arranged round and in contact with its edges only. This spot, however, the *macula aurea* of anatomists, where such absence takes place, is the most sensitive portion of the retina, and conveys to the mind the distinctest visual images. As we are blind in that part of the retina, the *macula nigra*, which is made up of the fibrils of the optic nerve alone—and, on the other hand, as we see acutely by the instrumentality of the *macula aurea*, where the nerve-cells and other elements of the retina, with the exception of the optic fibrils, do exist—it is conjectured that form, colour, and other properties of objective vision, are received by different and distinct portions of the retina. What is true of the eye is true of all the organs of special sense. If the tongue be burnt and its papillæ be destroyed, taste is lost in spite of the trunks of the gustatory nerves remaining entire. The various kinds of flavour seem to be appreciated, not by the same, but by different nerves. Destruction of the skin is followed by loss of touch; injury to the nostril involves the loss of smell. It is the business of the physiologist to trace our sensations to their material organs, not ours; we can only say, that in future no one has any right to discuss a metaphysical question as to the nature of the intellectual powers who neglects to master the results of modern physiology.

The second law of sensation is that, while the receiving and perceiving portions of an organ appear to analyse matter, the uniting medium seems capable of transmitting but one kind of sensation under every variety of stimuli. Thus, whether the optic nerve be cut or pinched, subjected to chemical or to electric irritants, the sensation is not that of pain, but of a sea of light quenched in black darkness. The trunks of the nerves of sensation ramifying on the skin, if similarly injured, transmit only the sense of pain, while their peripheral extremities give us intimations of every grade of contact, by touch, as well as every grade of temperature from 10° to 47° Cent., above or below which the sensation is simply painful. It follows, therefore,

therefore, that the analyses made in the receiving portion of an organ, the retina for example, are transmitted through the optic nerve, undetected and apparently undetectible in their transit. We know something obscurely of the duties of the external organ—a little, very little, of the communicating nerve channel—and absolutely nothing of the percipient brain spot in connexion with the said channel.

A third law of sensation is, that the impression remains for some time in a nerve, and that the brain is capable of perceiving only a certain number of impressions in a given time.

Valentin received 640 distinct sensations of contact in a minute by the revolution of a wheel armed with blunt teeth; a greater velocity of rotation inducing the feelings of a smooth surface. The same law holds good of the eye—the German toy of the jumping figure in a rotatory card is an instance.

A fourth law of sensation, and perhaps the most important one in a psychological sense, is that already alluded to under the term of law of externality. One would think that we ought to refer our sensations to the spot in the brain, where we are sure they alone are elaborated. But this we never do, always assigning the objects which we see, the sounds which we hear, and the odours we perceive, to some portion of space out of the brain. The sensations of touch even are invariably referred to some external part of the body. If the flowing hair of the Indian, extending to the heel, be but skimmed with the finger, the sensation is referred to the very point of the hair itself, where there is no nerve to feel it. If the trunk of the ulnar nerve be pressed at the elbow, the well-known tingling is not there, but at the fingers' ends.

After amputation the stump often heals badly and becomes a source of excruciating 'tic;' but by virtue of this law of externality, the affections of the trunk of the nerve are referred to a part of space beyond, and it is gravely asserted that many an old and mutilated veteran thus tormented can only sleep when the ghost of the lost foot is warmed at the extremity of the bed.

Modern surgery has revived the Taliacotian operation immortalised in *Hudibras*. The lost nose is now supplied by the skin of the forehead of the pathic himself: a triangular portion is cut down to the bridge of the nose, and then twisted and engrafted on incisions in each cheek; after a time the junction being completed, the twisted spot at the bridge of the nose is divided, and the new organ takes its place for the first time as an independent member. Before this, and during the process of engrafting, when the flap was still a portion of the skin of the forehead,

forehead, the pain of the half-assimilated nose is referred not to the sore of the cheek, but to the forehead, with the nerves of which it still communicates.

By the law of externality, together with that of the persistence of impressions for a time in a nerve, the psychologist explains the phenomena of hallucinations. The following observations and instances will require no recommendation from us to the reader :—

‘ A friend of mine, on awaking in the morning, saw standing at the foot of his bed a figure in a sort of Persian dress. It was as plainly to be seen, and as distinct, as the chairs and tables in the room, so that my friend was on the point of going up to it, that he might ascertain what, or rather who, it was. Looking, however, steadfastly at it, he observed that, although the figure was as plain as possible, the door behind it was plainly to be seen also, and presently the figure disappeared. Considering the matter afterwards, he recollected that he had had a dream, in which the Persian figure played a conspicuous part; and thus the whole was satisfactorily explained, it being evident that the dream, as far as this part of it was concerned, had continued after he was awake, and so that the perception of the imaginary object had existed simultaneously with that of the real ones. The same thing occurred to the same person on another occasion, and similar histories have been related to me by others. It is probable that this is the history of many startling and mysterious tales of ghosts and spirits.

‘ But phantoms similar to those which belong to dreams, and which, like them, do not vanish by an effort of the will, may, under certain circumstances, present themselves to those who are actually awake. They may be the result of some actual organic disease of the brain. A gentleman, eighty years of age, had been for some time labouring under hypochondriasis, attended with other indications of cerebral disease. On a cold day in winter, while at church, he had a fit, which was considered to be apoplectic. He was taken home and bled, and recovered his consciousness, not being paralytic afterwards. He died, however, in a few days after the attack. During this interval, though having the perfect use of his mental faculties, he was haunted by the appearance of men and women, sometimes in one dress, sometimes in another, coming into and loitering in the room. These figures were so distinct that, at first, he always mistook them for realities, and wondered that his family should have allowed such persons to intrude themselves upon him. But he soon by a process of reasoning corrected this error, and then talked of them as he would have talked of the illusions of another person. You have probably read the history of Nicolai, the bookseller of Berlin, who was haunted by visions of persons coming into his apartment, sitting down, and even conversing with him and with each other, and this during a period of several months. He also was at first taken by surprise, believing the phantoms to be real objects, but was soon enabled to convince himself that they were not so. His recovery was attributed to an improved state of his bodily health.

health. I would not weary you by referring to other instances of the same kind. The late Dr. Alderson, in an essay which he published nearly fifty years ago, gave an account of several which had occurred under his own observation, in individuals of perfectly sane minds, and others have been since then recorded by other authors.

‘Examples of deceptive appearances analogous to these, but less remarkable, are not very uncommon. A gentleman of my acquaintance, of a very sensitive and imaginative turn of mind, informed me that not unfrequently, when he had had his thoughts intensely fixed for a considerable time on an absent or imaginary object, he had at last seen it projected on the opposite wall, though only for a brief space of time, with all the brightness and distinctness of reality.

‘*Crites.* If such a person had the misfortune to lose one of his family or a dear friend by death, how easy would it be for him to believe that he had been visited by his apparition afterwards! It is probable that when Swedenborg supposed that he met Moses or Elias in the street, some such object was really presented to his mind; and that even Joanna Southcote, and others who have been regarded as a low order of impostors, were not altogether impostors, but in part the victims of their own imaginations. The subject is one which may well excite our curiosity, and I should be glad to obtain some further insight into it. Under what circumstances do these visions, so like those of our dreams, present themselves to the waking person? where do they really exist, and what is their origin?

‘*Ergates.* I have already stated that in the instance which I quoted on my own authority, the existence of actual disease of the brain was indicated by other symptoms. I have also mentioned that in that of the bookseller of Berlin there was a deranged state of the general health, and that he recovered under a course of medical treatment. In all the instances recorded by Dr. Alderson, the appearances were connected with actual bodily disease, which in two of them was of such a nature as especially to affect the nervous system. We may suppose the part actually affected to be the expansion of the nerve of sight in the retina of the eye; but it is more probable that it is that part of the brain itself which belongs to vision. In confirmation of this opinion, I may refer to a case recorded by Esquirol. A Jewess, who had been for a long time blind, became insane. Her illusions were of the sight, and she was constantly haunted by strange visions. After her death it was ascertained that the two optic nerves, from the part at which they are united within the head (which anatomists call their commissure), to their termination in the retinae, were shrunk and wasted, so that they must have been wholly incapable of performing their functions. I may also refer to another case which came under my own observation. A man met with an injury of the head, which, as the event proved, occasioned an extensive fracture in the basis of the skull, with such a displacement of bone as to press on the optic nerves, and render them wholly incapable of transmitting impressions to the brain. He was totally blind: otherwise he was not insensible, though he was slow in giving answers, and peevish when disturbed. On the second day after
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the accident, there were manifest symptoms of inflammation of the brain. He was in a state of great excitement, delirious, believing that he saw objects which did not exist, and he continued in this state until within a short period of his death.

‘ *Crites*. You have spoken of deceptions of the sight. Does nothing like this happen as to the other senses?

‘ *Ergates*. Certainly it does. The phantoms by which Nicolai was haunted are said to have conversed sometimes with him, sometimes with each other. I know a person, who amid the din of London streets occasionally has the perception of his being called by his name, so that he involuntarily turns round to see who calls him. Sir Henry Holland has given an account of a much more remarkable case. A gentleman had symptoms of an affection of the brain, which was attributed to an accidental blow on the head. On the following day he had pretty well recovered. Two days afterwards he was well enough to drive out in his carriage. But now, “for the first time after the accident, there came on the singular *lusus* of two voices, seemingly close to his ear, in rapid dialogue, unconnected with any present occurrence, and almost without meaning.” It is not uncommon to find persons, who, when their attention is not otherwise occupied, are distressed by the sounds of bells ringing. A gentleman, having what is commonly called a highly nervous temperament, had some teeth drawn while under the influence of chloroform. From that time, whenever his mind was not otherwise engaged, he was tormented by sounds as if a number of persons were yelling and hooting him. I have been told of a great musical genius, who, from the earliest period of his life, has never been without the sounds of music of the most harmonious kind. Then as to the other senses. I remember a man who had a severe blow on the head, occasioning the symptoms which surgeons attribute to a concussion of the brain. He recovered from the other consequences of the injury; but for a long time afterwards everything that he ate had a bitter taste. The case of another person who had a constant sensation as if a burning coal had been applied to his arm belongs to the same category.

‘ *Crites*. But are not all such cases as those which you have described, to be considered as examples of mental derangement, though not in its worst and most aggravated form? and does not this correspond with the view of the subject taken by Locke, who regards this disease as affecting the imagination only, and not at all the reasoning faculty?

‘ *Ergates*. Certainly not; for with the exception of Swedenborg, no one of the individuals whom I have just now mentioned mistook the deceptions as being connected with real objects. It is true, that some of those who are the subjects of mental derangement may see phantoms and hear strange voices; but they believe them to be realities, and cannot be persuaded that they are otherwise. Besides, as I am led to believe, it is not by this class of illusions that they are most liable to be tormented. As a morbid condition of the brain may produce the impression of visible objects, or of voices, which have no real existence, so it

it may also produce notions of a more complex and abstract character, and these may be constantly obtruded on the mind, so that the individual is unable to withdraw his attention from them, being, as it would seem, as much beyond the influence of volition as the muscles of a paralytic limb. Thus, one person believes himself to be ruined as to his worldly affairs, and that he and his family, though really in affluence, are reduced to extreme poverty; while another is persuaded that he is in possession of unbounded wealth, the consequence being that he is in danger of being ruined by extravagance; and a third is under the apprehension of his being accused of some dreadful crime, and perhaps seeks a refuge from his fears in self-destruction. It is more difficult to escape from the latter than from the former class of illusions, as the appeal lies not from one sense to another, but to a more refined process of thought and reflection, and the examination of evidence.'—pp. 79-89.

What a small barrier separates sanity from insanity! Not only an ill-nurtured reasoning faculty, but a lazy mind which will not take the trouble to analyse sensations, runs the hazard of madness. It is a very doubtful compliment to say that a man has his senses about him; he may have nothing else, and become the dupe to every kind of imposture from animal magnetism to table-turning. Not that these *exuvie* of the mind have not their use in rousing the apathy of scientific pride or prejudice, and thus to compel fuller investigation; and when this is candidly made, as it at last is sure to be, the particle of truth that floated with the bubble is garnered and lodged in the temple of science. It is but the other day that M. de Boutigny gave us the scientific explanation of the undoubted instances of the ordeal by fire—those miracles of the middle ages—and so enabled any gentleman to wash his hands in molten lead, or, if he prefer it, to see it done for a shilling in the Polytechnic.

The law of externality has also a very important bearing on some of the most vexed questions in metaphysics—that one, for example, of Locke, and especially of Condillac, that all our ideas are derived from sensation, and that the mind is a *tabula rasa*. The physiologist proves beyond all cavil that the so-called transformations of our sensations into ideas do not exist. On the contrary, he shows that as soon as the organs of sense begin to be acted on, there is already a mind to *attend* to the nerve excitation, to receive and to perceive it, and to add to it the *idea* of space by giving that sensation a local habitation; without these mental acts no sensation is possible. A *tabula rasa*, i.e. a mind divested of all its attributes, is as little conceivable as matter which has neither length, breadth, thickness, nor resistance. The readers of Leibnitz and Kant will need no further development of 'cognate ideas.'

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“ If this were the place, we could readily show how largely mind enters, as a separate thing, into the nerve excitation of our sensations—a task rendered easy by the great light which the investigations of the brothers Weber have thrown on the subject. But our space compels us to pass on. The sphere of sensation is as yet unknown in its totality. The mind receives intimations of many conditions of the body by means of which we are entirely ignorant. Thus the condition of our muscular tissues is intimated by feelings of languor or of vigour. The seats of all our emotions are still a mystery. Equally so are those of instinct. What guides the bird with unerring certainty to his distant and unknown resting-place? Are all the aspirations of man for repose and peace beyond the grave mere logical entities, vain ideas, which a sneer can crush? Has hope, that most abiding of passions, no organic seat? and its blessed light no source in the very substance of our frame? Was Cuvier wrong in surmising that the extraordinary development of the Arab mind, in the direction of mysticism and religion, was connected with his cerebral organisation? The dominant forms of religion—Judaism, Mahomedanism, and Christianity—have all emanated from Arab tribes, and been maintained with a tenacity unknown to Egypt, Greece, and Rome.

Our author has come to the conclusion that there is an organ of speech and also an organ of memory. The instances of each faculty, adduced in support of his theory, are too remarkable not to be quoted. The term organ is used by Sir Benjamin as indicating a portion of the brain only—neither its locality nor its structure being defined. Whether the same conditions and organisation are required for the transmission of the perceptions and notions of the understanding as are essential for the apprehensions of sense, it would be idle to discuss: we know nothing of mental organs, not the place even of a single faculty of the higher order.

“ There are, however, cases of incapability of articulate speech which cannot be referred to either of these categories. There are individuals who, having suffered from disease of the brain, are unable to express their thoughts by speech, although their faculties being little or not at all impaired otherwise, they have a perfect comprehension of what others say, and of what they wish to say themselves. Some of them can utter a few words, others none at all, and others again, when intending to say one word, use another. But there are other cases still more remarkable, the facts of which may well lead us to believe that the organ of speech, if not originally and congenitally wanting, has been at any rate from the beginning so imperfect as to be useless. Two examples of what I have now mentioned have come under my own observation. Several years ago, I saw a little boy, then about
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five years old, whose faculty of speech was limited to the use of the word *papa*. This, it may be observed, is so simple a sound, that dolls are made, by some very simple mechanism, to produce it very distinctly. I soon ascertained that the sense of hearing was perfect, and that there was nothing peculiar in the formation of the soft palate, mouth, and lips. There was no want of inclination to speak, but the attempt to do so produced sounds which were wholly inarticulate. So far was the child from being deficient as to his powers of apprehension, that he seemed to be even beyond what children of the same age generally are in this respect. Although he could not speak himself, he understood perfectly what was said to him by others, and expressed his answers by signs and gestures, spelling with counters monosyllabic words which he was incapable of uttering. I should add, that the external senses and powers of locomotion were perfect, and that all the animal functions were properly performed. The only other sign of disease or imperfection of the nervous system was that, for two or three years before I saw him, the child had been subject to fits or nervous attacks, attended with convulsions, but which (as I was informed) his medical attendant in the country regarded as having the character of hysteria rather than that of epilepsy.

‘I have had no other opportunity of making my own observations on the case; but eight years afterwards I was informed, on good authority, that he was still unable to speak, though he had made much progress otherwise; and that, among other acquisitions, he wrote beautifully, and was very clever in arithmetic.’

‘The other case to which I have referred was that of a girl, who, at the time of my seeing her, was eleven years of age. She had no faculty of speech, uttering merely some inarticulate sounds, which her parents in some degree understood, but which were wholly unintelligible to others. It was easily ascertained that her sense of hearing was perfect, and that there was no defect in the formation of the external organs. After a careful examination, I was satisfied that the parents were correct in saying that she comprehended all that was said to her. She was perfectly tractable and obedient, and did not differ, either in her appearance or as to her general behaviour, from other intelligent children. Being in an humble sphere of life, it seemed that very little trouble had been taken with her education; still, when I placed before her a book which she had never seen before, and desired her to point out different letters, she did so with readiness and accuracy, making no mistakes. She had never suffered from fits of any kind, nor were there any indications of cerebral disease or other physical imperfection. Her parents said that from her earliest age she had been as she was when I saw her, equally intelligent, but incapable of speech.’—pp. 47-51.

We know of no other examples in the annals of medicine similar to these—of man being reduced to the condition of an animal in so far as speech is concerned. The following points elucidate our author's views as to the organisation of memory:—

‘Notwithstanding

‘Notwithstanding these points of difference, it is plain that memory is closely allied to sensation, and the resemblance between the two orders of phenomena is so great as to justify the suspicion that the nervous system is instrumental in producing the one as well as the other; while a multitude of facts show that the suspicion is well founded. A blow on the head may destroy the memory altogether, or (which is more usual) it may destroy it partially, or it may interrupt its exercise for a certain time, after which it may be gradually, or even suddenly, restored. After fever, also, and some other bodily ailments, the memory is not unfrequently impaired or lost. A gentleman found that he had lost the power of vision in one eye. Then he regained it partially in that eye, but lost it in the other. Afterwards he partially regained it in the eye last affected. He could now see objects when placed in certain positions, so that the image might fall on particular parts of the retina, while he was still unable to see them in other positions. These facts sufficiently prove the existence of some actual disease. But observe what happened besides; his memory was affected as well as his sense of sight. Although in looking at a book he recognised the letters of the alphabet, he forgot what they spelled, and was under the necessity of learning again to read. Nevertheless, he knew his family and friends; and his judgment, when the facts were clear in his mind, was perfect.

‘In another case, a gentleman who had two years previously suffered from a stroke of apoplexy (but recovered from it afterward-) was suddenly deprived of sensation on one side of his body. At the same time he lost the power, not only of expressing himself in intelligible language, but also that of comprehending what was said to him by others. He spoke what might be called *gibberish*, and it seemed to him that his friends spoke *gibberish* in return. But while his memory as to oral language was thus affected, as to written language it was not affected at all. If a letter was read to him, it conveyed no ideas to his mind; but when he had it in his own hand, and read it himself, he understood it perfectly. After some time he recovered of this attack, as he had done of that of apoplexy formerly. He had another similar attack afterwards.

‘A blow on the head which causes insensibility generally affects the memory so far that when the patient has recovered from the state of insensibility he has no knowledge of the accident. *But in some instances the effect of a blow on the head is merely to disturb the memory, the other functions being unimpaired. A groom in the service of the Prince Regent was cleaning one of some horses sent as a present to his Royal Highness by the Shah of Persia. It was a vicious animal, and he kicked the groom on the head. He did not fall, nor was he at all stunned or insensible; but he entirely forgot what he had been doing at the moment when the blow was inflicted. There was an interval of time, as it were, blotted out of his recollection. Not being able to account for it, he supposed that he had been asleep, and said so to his fellow-servants, observing at the same time “that he must set to work

to clean the horse, which he had neglected to clean in consequence of his having fallen asleep."

'In other cases the effect of a blow on the head has been not only to erase from the memory the events which immediately preceded the accident, but also to prevent it retaining the impression of those which occurred immediately afterwards. A young man was thrown from his horse in hunting. He was stunned, but only for a few minutes; then recovered, and rode home in company with his friends, twelve or thirteen miles, talking with them as usual. On the following day he had forgotten not only the accident itself, but all that happened afterwards.'—pp. 53-57.

Sir Benjamin regards the impressions made on the organs of sense as producing some actual change in the minute organisation of the brain, which he considers essential to memory. There is this additional fact noticed by him to eke out his theory of an organ of memory, namely, that we remember nothing to which we do not *attend*. The same act of the mind, viz. attention, which we have seen is required to realise a sensation, is also requisite for remembering.

We must not close the volume before us without briefly adverting to the author's opinions on insanity, which he appears to refer in all its forms to corporeal disease. It certainly is easier to believe that discords depend on a flaw in the instrument rather than on the inaptitude of the player using it. The contrary view does not, however, want its advocates. It is, as we have before remarked, impossible to connect mania with any given disease of the brain. The instances of sudden recovery after years of mental malady are numerous and authentic. Is it probable that an organic change, the supposed cause of madness, could be so quickly removed? The whole theory of education and of morals hinges on the postulate that the mind itself can be and is changed. The development of our faculties, the perversion of our will, the slavery of a dominant passion, are wrought by methods and motives, and not by medicine and mandragora. We find, too, that the largest amount of cures effected among the insane results from moral means. Indeed, in most, if not all establishments for lunatics, the practice is almost exclusively directed to soothe and divert the mind by occupation, and to substitute for the habits of disordered mental association a wholesome current of thought and feeling—the physical treatment being little more than the corporeal supervision which most are wont to exercise over themselves in daily life. Lastly, of the causes of madness, the most potent are moral. Our passions, of all poisons, are the deadliest, and the most penetrating, for they kill both body and soul. We quote, from one
of

of our highest authorities on the diseases of the mind, Dr. Thomas Mayo, a passage not less profound than it is eloquent:—

‘ That there should be a disease of the mind in the abstract, that such disease should work changes in us, is neither unnatural nor inconceivable. A parasitical growth—if, for want of a proper term, I may borrow this epithet, from physical speculation—may take place under such disease, itself possessing vital functions and energies, but, having no other relation to matter than the obvious one on which the tenure of our present life is based, viz. that we have an immaterial and a material being, indissolubly bound together for the duration of that life; while, for anything we know, the immaterial element may be just as subject to its proper affections, as the material one is.’—*Medical Testimony and Evidence in cases of Lunacy*, p. 24.

Of late, a form of madness has been described under the term of moral insanity, which has completely removed all the barriers which separate vice and insanity, and thrown the whole subject of madness into the direst confusion. The individual is supposed to have all his wits entire, and to be under no delusion or illusion; but he is the subject of an impulse which compels him to perform some extravagance injurious to himself or others. Granting the impulse, the question remains—Was it irresistible? Are such persons, says Sir Benjamin, so incapable of the fear of punishment, and so absolutely without the power of self-restraint, as they are represented to be? Can a gouty person, continues our author, plead, as an excuse for his peevishness or violence, that there was lithic acid in his blood, as Dr. Garrod proves? The jury acquitted Oxford, for attempting the life of the Queen, on the plea of moral insanity: admitting the impulse to have been at the moment of attack irresistible, still the question remains—whether, when the notion first haunted him, it might not have been controlled. Oxford himself seems to have thought that others would have been restrained from repeating the attempt, had he been hanged. Sir Benjamin goes still further, and will not allow that any illusion even can be pleaded in excuse for responsibility, alleging that in many instances these illusions have not such hold on the morally insane biped as have some of the instincts of animals (that of a dog to kill sheep, for example), which are overruled by the proper discipline.

Dr. Mayo, whose attention has been directed with much success to this class of inquiries, has arrived at similar conclusions to our author, as the following analysis by Sir B. Brodie proves:—

‘ He has shown that many of the cases described as belonging to this category were neither more nor less than examples of insanity, according to the strict and ordinary interpretation of that term. He has

shown that others, in which the plea of "moral insanity" was set up as an excuse for crime, deserved no better appellation than that of "brutal recklessness;" and that to acquit criminals of this class on the ground of irresponsibility, is only to induce others to follow in the same course, who might otherwise be restrained by a wholesome fear of punishment.

'Even with regard to those who are actually insane, he is of opinion that there is a defect "in the nature of our criminal code, which recognises no punishment for offences committed by the insane; and forces the Courts either to visit them with the same penal inflictions as would apply to the same acts committed by the sane, their derangements being ignored, or to let them pass unpunished, however partially responsible they may appear."

'Dr. Mayo has treated the whole subject, including that of mere unsoundness of mind, in the most able and lucid manner; and his observations on it are the more valuable, and will have the greater weight, as they come from one who combines just theoretical views with the practical knowledge of an experienced physician.'—pp. 250, 251.

We wish it were in our power to allay the fears of those who have intimated anonymously to our author, their alarm as to his favourable treatment of the *anima brutorum*. We venture to offer for their consideration and comfort the following observations of Sydney Smith:—

'I confess I treat on this subject with some degree of apprehension and reluctance, because I should be very sorry to do injustice to the poor brutes, who have no professors to revenge their cause, by lecturing on our faculties; and, at the same time, I know there is a very strong anthropical party who view all eulogiums on the brute creation with a very considerable degree of suspicion, and look on every compliment which is paid to the ape as high treason to the dignity of man. There may, perhaps, be more of rashness and of ill-fated security in my opinion, than of magnanimity or of liberality; but I confess I feel myself so much at my ease about the superiority of mankind—I have such a marked and decided contempt for the understanding of every baboon I have ever seen—I feel so sure that the blue ape without a tail will never rival us in poetry, painting, and music, that I see no reason whatever that justice may not be done to the few fragments of soul and tatters of understanding which they may really possess. I have sometimes perhaps felt a little uneasy at Exeter Change from contrasting the monkeys with the 'prentice boys who are teasing them, but a few pages of Locke, or a few lines of Milton, have always restored me to tranquillity, and convinced me that the superiority of man had nothing to fear. . . . What have the shadow and mockery of faculties given to beasts to do with the immortality of the soul? Have beasts any general fear of annihilation? Have they any love of posthumous fame? Have they any knowledge of God? Have they ever reached in their conceptions the slightest trace of an hereafter?

Can

Can they form the notion of duty and accountability? Is it any violation of any one of the moral attributes of the Deity to suppose that they go back to their dust, and that we do not? It is no reason to say, that because they partake in the slightest degree of our nature, that they are entitled to *all* the privileges of our nature; because, upon that principle, if we partook of the nature of any higher order of spirits, we ought to be them and not ourselves, and they ought to be some higher order still, and so on. And if it be inconsistent to suppose a difference in duration, then also it is to suppose a difference in degree of mind, and then every human being has a right to complain he is not a Newton. As facts are fairly stated, and boldly brought forward, the more all investigation goes to establish the ancient opinion of man, before it was confirmed by revealed religion, that brutes are of this world *only*; that man is imprisoned here only for a season to take a better or a worse hereafter as he deserves it. This old truth is the fountain of all goodness and of justice and kindness among men; may we all feel it intimately, obey it perpetually, and profit by it eternally.'—*Elementary Sketches of Moral Philosophy*, p. 238 and 272.

Numberless subjects for thought and discussion remain compressed in the little volume which we now abandon to the reader, with the conviction that he will derive no less delight and instruction than we have done in communing with so full and wise a mind as that of the author of 'Psychological Inquiries.'

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- ART. V.—1. *Clerical Economics.* By a Clergyman of the Old School. Edinburgh. 1842.
2. *The Manse-Garden.* Glasgow, n. d.

HAD Dominic Samson lived in our own days, he might have 'wagged his pow in a pulpit' after all. Such is the multiplication of guides to the Divinity student, and of aids to help stickit ministers over the theological stile. Certainly when once fairly master of his manse and stipend, he would have found, not among his ancient folios, but in such modern duodecimos as are now before us, counsel enough to shape even his awkward ideas into seemliness, and all proper conduct prescribed him for the management of his heritors and his garden, his ox and his horse, his man-servant and his maid-servant, and if not for the management, at least for the selection, of the minister's wife.

The admirable 'Manse-Garden' of the Rev. Dr. Paterson had already worked wonders in that part of the island more celebrated for its gardeners than its gardening, and converted many a minister's slovenly kailyard into a patch of comparative Eden; when following in the track, as a most useful and judicious supplement,

supplement, or rather complement of the whole matter, comes the 'Clerical Economics' of the Rev. Dr. Aiton. We have ventured to assign the names and callings of the authors to two originally anonymous title-pages, regardless of the thunders of the presbyteries that rule over Glasgow and Dolphinton. But with our brethren of the North, one step of the minister over the manse threshold into the common field of literature has too long been held a mortal sin. It is time for such mistaken asceticism to have passed away. At least into his garden and his glebe he has a right, at common sense, to wander; nor does it tell well for public opinion that a clergyman should deem it necessary to apologise for a work on the Manse-garden as a thing nowise contrary to clerical duty, and to forestall the expected inference that 'surely a man can be no faithful labourer in the Lord's vineyard, seeing he must possess such leaning towards his own.'*

Into the Manse itself and its appurtenances these two little books give us a very clear insight, and present a view of life characteristic and primitive, and very little known to our Southern readers. The writers are excellent examples of that shrewd sense, and that wholesome mixture of simplicity and canniness, so distinctive of the Scotch type of the dove-and-serpent Christian.

The points of likeness and difference between the Scotch Kirk and the English Church afford many curious and important materials, which it would be well for both at the present day calmly to consider. Into their forms of government, much less into their dogmatic teaching, we do not now attempt to enter. The relative social position of the clergy, and the bearing of that position on the laity, are what the volume of Dr. Aiton rather suggests to us, and it is but a glance that we can afford at those subjects more or less interwoven with it—the amount and manner of payment, connection with the State, synodical action, and educational superintendence, rocks already indicated by breakers ahead to the steady and safe sailing of at least the English ark.

The thralldom, if it so be, of the Scotch Kirk is in reality much greater than our own. Having a free synodical action, and being on the whole further removed from parliamentary interference, it is generally deemed far more independent of

* Dr. Aiton's wanderings have indeed not been so confined. He is one of the few of his brethren who have been able to accomplish the early desire of his heart—a journey into the Bible-lands of the East; and among the many volumes of Oriental travel, which have now a deeper interest for all, there are few more instructive and characteristic than the Scotch minister's impressions of '*The Lands of the Messiah, Mahomet, and the Pope*;'—so quaintly runs the title-page of Dr. Aiton's recent work.

State control; but in truth that 'working in chains,' which in the English Church so chafed the sensibilities of Newman and his followers, has much more real existence in the Kirk. If we are to believe Dr. Aiton, Teind Courts and heritors may be set down for their share in the Free Kirk movement as much as the particular question of patronage involved in the Auchterarder Case. Nevertheless we must add that the long list of clerical grievances with which Dr. Aiton's book opens and closes, make us suspect the reality of many of them; a few no doubt have a substantial existence; but we fear that such of them as are not innate in human nature, are inseparable from their form of Church government, and past the power of King, Lords, and Commons to cure. To an English churchman, for instance, the late great secession is only intelligible from his perceiving the inherent defect of the Presbyterian scheme, by which the spiritual follows the temporal act—ordination succeeding to nomination—an arrangement which must of necessity sooner or later bring the civil and spiritual powers into collision. The Church of England, by acknowledging the priest as apart from the pastor—and herein in truth lies the distinctive principle of the two churches—escapes this calamity.

Before entering into the minister's grievances here is Dr. Aiton's more cheery view of his domestic comfort:—

'The Manse has something about it altogether *sui generis*. Even a foreigner, after seeing one or two manses in Scotland, could point out almost every one, amid all the other houses in any parish, from Maidenkirk to John O'Groats; and nobody can say whether it manifests these distinctive marks from what it has, or from what it wants. Upon the whole it is, or may be, one of the snuggest houses in Europe; but sometimes with an ugly number of windows when the tax comes a-paying. It is occasionally splendid and generally genteel; but here and there it is not quite handsome enough. A country manse is not a mansion-house, a jointure-house, or a farm-house, far less is it a cottage or a castle; yet it has something more or less of each and all of these strangely blended. In a word it must out and in be described by itself.'

There is then no mistaking the Manse. The greater uniformity of stipend than with us and the supervision of heritors reduces it to a standing type. It has little of the cottage ornée style which sets off many a humble English vicarage as long as the bark yet clings to the verandah posts, and the pebbles in the porch are firm, but which by the time the boys are going to school, and the mother has other than vegetable creepers and climbers to look after, has arrived at a state of shabby gentility in keeping with the father's coat. The
Scotch

Scotch Manse is a plain, substantial, and commodious dwelling, built on Bacon's rule, 'to live in, not to look at,' somewhat austere and precise, but therefore the more in character with its office,—'a model,' says Dr. Paterson, 'of the golden mean, as if Providence had chosen to illustrate by his servants in the ministry the wisdom of the prayer, "Give me neither poverty nor riches!"' Within a stone's throw of the cold grey church, whose flat roof and roundheaded windows shock the nerves of the ecclesiologist, and within bucket-draught of the burn, whose course you may track under the hill-side by the wavy fringe of birches and bushes, rises this 'modest mansion,' in as pleasant a *stance* as the village has to offer. 'Such felicity of site,' Dr. Paterson with equal felicity remarks, 'has often led to the sarcastic observation that the Church is too wise not to have the best things to herself. But so far as the accusation of a selfish wisdom is limited to a predilection for the murmuring stream and the shade of trees, without implying the guilt of aggrandisement, it may be easily borne. But even this, if the charge were grave, might be answered by the fact, that the sweet attractions of the river have first moved the flocks to feed on its green pastures, and that thither the shepherds have but followed them.' The equally distributed sash-windows of the Manse, and the 'central door with its *fawn*-light, suggest the dim-lighted lobby with its room on each side to match. These are perhaps the dining and the drawing rooms, whose well-polished furniture will be saved much wear and tear, and lack somewhat of comfort and airing, if there be in nearer connection with the kitchen a parlour behind, which in fact serves as the common living-room of the family; or more frequently still, the front apartments are the dining-room and the parlour; the first also serving for the minister's book-room, while the choicer furniture of the drawing-room reposes in the dignity of the first-floor. A stable, a barn, a byre, with a brew-house, a 'milk-house,' and a 'cart-shade,' make up the respectable complement of offices—while universally conspicuous in its naked ugliness is the square garden wall of its statutable dimensions of 'five feet high, exclusive of coping.' If the paddock lie between the house and the road, the degree of care bestowed on the state of the approach will give no unfair indication of the well doing, or otherwise, of the minister and his family, perhaps of the Parish also.

The repair of the manse does not fall, as in the English parsonage, on the minister for the time being, under the supervision of the rural dean and archdeacon; but is the duty of the heritors, and herein occasionally lie grievous sources of misunderstanding and estrangement. The teinds or tithes in Scotland at the Re-
formation

formation adjustment were not left in the anomalous condition which still holds in England; they were assigned universally to the landowners, subject to the payment of 'an honest provision' for the minister, and for the sustentation of the manse and glebe.

'The manner,' says Dr. Aiton, 'in which the stipend is paid is not only extremely troublesome, but also mean and degrading to the clerical character. Part is paid in money, part in meal, part in barley; and a proportion of each of these is allocated on the lands of every heritor within the parish. The heritors sometimes, again, apportion their respective shares of money, meal, and barley, on all their tenants, conform to their rents. So that the minister is obliged to collect his stipend in meal, money, and barley, from almost every possessor [holder?] of land within the parish: it may be from forty to four hundred in number; and the most trifling quantities, as firlots, pecks, and lippies of meal and barley, and shillings, pence, and farthings of money. The scheme of division or locality of a single minister, for the small sum, it may be, of 151*l.*, is frequently longer than the rent-rolls of a peer of the realm. A large portion of time is occupied in calculating fair prices [that is, the average market price of grain struck by the sheriff], granting discharges, taking the grain to market, and recovering the money. There is often a loss too from the minister not being a judge of the qualities of the meal and barley. And if he be sharp-sighted, there is sometimes unavoidable wrangling between him and his parishioners. Take the following, as well known in the district where it happened within these ten or twelve years:—"William, you must bring me better grain; I can't sell it, it is so bad." "It is just what the land produces, sir, and I have naething else to gie." "But then you are a bad farmer, William. You must farm better." "Tut, sir, tut, sir, that's no civil. I'll no tak that aff' your hawn. I attend your kirk, and ye gie us yoursel' just what the land produces, and I dinna fin' fant. I dinna tell you that you are a bad preacher, altho' ye tell me I am a bad farmer." "But aiblins, gif I was to stap in to the Burger-house I might get baith bigger measure and the grain better dighted." "If ye'll caw the weak corn and cauf out o' your sermons, I'll put my corn ance mair through the fanners." Often did the respectable clergyman tell this with great glee.'—*Cler. Econ.*, p. 25.

The account is amusing, but the case of a Scotch minister receiving his stipend in kind is so rare and exceptional, that if the statement had not proceeded from a beneficed clergyman, who illustrates, perhaps, in his own person, the evils of which he complains, we should have doubted its correctness.

When the means of the minister are below the average, he is a perfect exemplar of clerical economy. Frugal, managing, paying his way, denying himself for the sake of his family, he shows to his neighbours the value he sets on education by the sacrifices he makes to obtain it for his children. Dr. Aiton dedicates his book 'to a father, who, on an income which never exceeded a hundred pounds

pounds yearly, educated, out of a family of twelve children, four sons to the liberal professions; and who has often sent his last shilling to each of them in their turn when they were at college.' We doubt if the French Institute's 'reward of virtue' was ever given to a worthier case. The simple statement is more touching than a hundred volumes of pathetic novels; and, to the honour of Scotland, it belongs not to an individual, but to a class. The red-cloth college-gown, descending through three or four academical generations of lads, may be seen in the streets of Glasgow nobly reproving our Southern collegiate foppery—that gown too perhaps the very same in which the father attended the humanity-class, where he picked up the little Latin that has enabled him to prepare his sons in their turn to wear it. The minister is no scholar, nor pretends to be. Deeper read in his Bible than in Divinity, he admits the excellence of Anglican theology without caring to study it. A friend to order, and with no priestly pretensions, he is for maintaining the 'establishment' as it is, barring the heritors and the court of teinds. Having made up his mind upon prelacy as an undoubted invention of the enemy, he looks upon Episcopalianism as genteel Romanism—Popery-and-water. Liturgies he considers babes' food. Church history before John Knox is nought to him; but the written word is his study. What the cross was to early Christians, a text is to him; and he has a word for all occasions, in season and out of season. With his pocket Bible, he is 'the Christian armed,' and exhorts and 'improves' largely by the aid of the book. When Sabbath morning comes, he has no old bureau-drawer to go to from which to take the two uppermost sermons; unless he is gifted with powers of preaching 'extempore' in fact as well as appearance, he has all the week been 'committing' his discourses, and his prayers to boot. Thus his thoughts run upon his work through the week, though, like those of his congregation, too much centred on the sermon. His church consequently is a mere auditorium. He has no theory of Holy Places. 'The Lord has His Day in Scotland, but not His House. It is man's house of preaching, not God's house of prayer. Yet its neatness and cleanliness often puts to shame the loftier theory of the South. The pulpit, the highest means of grace, has a pre-eminence that would satisfy Mr. Ruskin himself, except for its too evident symbolism. The regret of a stranger on visiting a kirk is, that it gives another evidence of the dislike of the people to recognise any accessories to naked truth. They have good reason to be jealous of meretricious clothing; but in our present fallen state, there is surely a decency of apparel as Scriptural as it is convenient.

The

The manse garden makes no pretensions to compete with its Southern representative; and the rules laid down by Dr. Paterson, though thoroughly useful for the exposed sites and culinary purposes of Scotch horticulture, give few hints for the gayer parterres of England. 'The pretty pattens stepping off the vegetable grounds' on to the new-laid gravel come in for more chiding than they need with us; and there is no flower described with half the heart that is shown in his notice of the holly—that pet of all gardeners in prose and verse, from Evelyn and Herrick downwards.

'Of all the trees of the forest, the native holly is the most interesting and beautiful. Whether young as a shrub in a garden, or old as a lonely tree of the mountain, its glowing fruit and glossy leaves, gleaming in the winter sun, prove the delight of all eyes. It allures, to its own hurt, the mischievous schoolboy; it is the laurel of Burns, and the sanctuary of singing-birds. Shielding its songsters from the hawk, it shelters them in the storm, and feeds them with its fruit when other trees are bare. It does one's heart good to see the humble blackbird picking a red berry amidst the falling snow.'—*M. G.*, p. 11.

The English parsonage, as we have remarked, admits of more variety than the manse, not only from incomes varying from 2000*l.* to 20*l.* a year, but because there are no heritors to interfere with individual taste; yet that must be an unobservant eye that in passing through a village does not detect the quiet vicarage or the more ambitious rectory at the first glance. Of late years, indeed, they have often assumed a very undue pretension, and in towns run the brewer and the banker hard in red brick, while, in the country, the gables and mullions, as many as can be got for the money, label the modern parsonage for the stranger's eye. The older parsonage has not much architectural beauty to boast of. It has not sprung in all its full proportions from some young architect's brain, but, like the neighbouring church, has grown by gradual accretion, as the family or the pretensions of its successive occupants have demanded. An old-fashioned air of comfort seems to reign within, though often with some faint suspicion of damp and earwigs. The offices are especially irregular and anomalous, and are ill-concealed by the ivy and pyracanthus that have outgrown their first intention. The shrubs, too high and too closely set, and, in spite of the timid clipping of their lower branches, overlapping the weather-washed gravel path, have all but destroyed the stringy and interrupted remnants of the box-edging, once so trim, but now recalcitrant at the clippers, and asserting a shrubby existence of its own. The lilacs, the laburnums, and the syringas, with an ivy-covered apple tree peeping out amongst them, so choice in the days when they

they were planted, seem to have suffered from an ultra-conservative system of protection and to have outlived their time, and now await the reforming hand of some junior fellow, who has already, on his visit to his old tutor, mentally laid out geometrical patterns of verbenas and petunias on the site of the ragged shrubbery and its exhausted herbaceous border. It was an act of virtuous self-denial if he has not also plotted a new bow window to the drawing-room and furnished it with a youthful figure, in lively contrast to the old lady who is now nodding her turban over the comforter she is knitting for her old man, whom she, too, in her day, had lured from the independence of college rooms to the cares and the comforts that beset a country parsonage and a married life.

Latterly many of our benefices have been much overhoused, a very serious evil to any one, but doubly so to the clergy, whom it may tempt to live, if not beyond their fortune, yet above their station. A moderately sized house, however, is never a detriment to the poorest living, and as good a house may be provided for a living of 100*l.* a year as for one of 500*l.*; but houses that compel a greater expenditure than the latter sum are often burdensome, however large the amount of the benefice may be. The Ecclesiastical Commissioners, in stereotyping a parsonage plan for 900*l.*, did right in requiring three sitting-rooms, of which one was, of course, the study (it is not every one who, like Richard Hooker, can rock the cradle and write his sermons at the same time); but to adopt an uniform skeleton, which was to be cased in Italian or Gothic stucco, as the taste of the incumbent might incline, was indeed a miserable makeshift in the present march of architectural knowledge. A greater mistake was making the parsonage a squire's house in miniature; whereas it requires special arrangements of its own. A small room wherein to see the parishioners, in connection with the back door, has been considered to meet all pastoral requirement, and fifty years ago it was a great step in advance. It may be hoped that we have now got beyond this, and that the parson would wish to see more of his parishioners than is implied by such an arrangement. His relation to his flock would be far better marked by a large high hall, where he might collect his parishioners on a variety of occasions,—for smaller missionary meetings, for auditing club accounts and receiving the monies, for catechizing candidates for confirmation, for practising the choristers.* Here might be kept the lending library; its walls might exhibit maps and pictures and objects of interest too choice for the school; evening lectures

* A paper, read by the Rev. A. Baker before the Bucks Architectural Society, suggests many other excellent hints for the builders of parsonage houses.

on secular subjects might be given, which the electrifying machine, and galvanic battery, and magic lantern might help to enliven. Here, too, at festivals might the poor be feasted, or an adult or temporary school be held with greater convenience to the clergyman than in the school-room. Nor would it be without its domestic use; it might serve for the dining-room of the family; and if there were no oratory in the house, which it would be well for every larger parsonage to contain, it would by a moveable prayer-desk be made a more suitable place for household prayer than the breakfast-room.

Without affecting Gothic ornament, the parsonage may well aim at an ancient type in preference to the civic sash-window style. Horizontal windows, and plenty of them, put in where they are wanted, for inside use, not outside show, best suit the low rooms with which the parson must generally content himself. Open windows in summer, through which the garden breezes will come sweetly wafted, and Arnott's ventilators for the fire-season, which includes three-fourths of England's year, will keep the lowest rooms fresh and healthy. A few moulded bricks, judiciously placed in the chimneys and cornices, or some coloured bricks on the surface, will give all the outside beauty needed beyond good proportion, and would cost but a few additional pounds. It is a miserable shift to try to hide the offices of a house, which, if well arranged and brought into view, give character to the dwelling and insure the better conduct of the domestics. Where old walls require external plastering, let it be the old-fashioned pargetting instead of rough cast, or modern-scored stucco. The recovery of old parget patterns and the invention of new, is a field of architectural study hitherto most undeservedly neglected.

On the garden there is more temptation, but less occasion to dwell. We have spoken of it at length and in relation to the clergy long ago.* Certainly the English parson is not generally behind his neighbours in this department. But even here he may exemplify the combined principles of conservancy and progress more than he has hitherto done. The small space which he can consistently devote to flowers (for in clerical economics a great garden is a great evil) must so necessarily be under his own easy and immediate control, that he may concentrate on a small spot many principles which are dissipated by his wealthier neighbours. The acknowledged theory of the best ornamentation, which requires strips of white between brilliant colours, may be exemplified

* 'The Flower-Garden,' *Q. R.* vol. lxx. p. 241, and since separately published in Murray's 'Railway Library.'

in a little border ten yards square, more than we have ever yet seen it done in the most elaborated paradise; and there are discarded white flowers which our grandmothers loved that would assist in realising this result. Different shades of green in the shrubberies offer another scarcely tried experiment, and the revival of short clipped hedges of evergreen would be peculiarly appropriate. Let there be a broad lawn or an adjoining paddock in hand for the school children's games, and, above all, let not high trees keep off the sun that gives life to the perfume and brightness to the colours of the flowers. We have not the faith and forethought of our avenue-planting ancestors. We can neither wait nor look forward. Trees and shrubs are now placed where they will produce the best immediate effect; this is probably acquired within the first six years, and yet the plants are allowed to go on growing and growing till nothing but the thorough clearance by a stranger's hand can restore them to their just limits. The line of demarcation between the flower and the fruit garden need be very slight, and with very little extra care the vegetables also may be admitted to the society of their betters. Archdeacon Sandford's garden at Dunchurch was a pattern in this respect. By invariably raking over the ground wherever a stalk of celery was dug up or a lettuce pulled, and by keeping the cabbages as free from weeds as were the roses, the whole garden, judiciously arranged with broad walks of gravel or grass leading to every part, trebled the pleasure to the possessor, and was a show to the neighbourhood; and certainly in this case the care bestowed on the natural led to no neglect of the spiritual vineyard. It is a mistake embracing the churchyard within the garden. The boundary here should be distinctly defined not only by fence, but by character. Let the paths be straight and trim, the turf short, and no other gardening will be required than a few appropriate shrubs and trees, as the cypress yew, the Irish and common yew, the Lebanon or the Deodar cedar. Flower-beds on graves have more of sentiment than religion, and when the time comes, as come it must in human course, that they are neglected and the flowers grow wild, the sadness is too oppressive to be instructive, and thoughts arise more of the vanities of this world than of the hopes and blossomings of a better one. While speaking thus of the danger of over-dressing which is becoming common in our English churchyards, no words can describe the horror with which we have witnessed many kirkyards in Scotland. 'It is almost incredible the apathy with which a religious people permit the bitterest Eastern curse to be habitually and unreprievedly fulfilled on their fathers' graves.

The Scotch minister is on the whole better domiciled than the English. The old law of the thirteenth century assigned a
thousand

thousand pounds Scots (83*l.* 6*s.* 8*d.*) for the erection of a manse ; now the Court allows about 1000*l.* sterling—sometimes less and sometimes more—an average which exceeds by 100*l.* the sum assigned by the Church Commissioners for new parsonages in England. ‘Moderation in dimensions, simplicity in ornament,’ are the very proper principles laid down for building. And the minister can reckon with certainty on a substantial house awaiting his arrival ; whereas the new vicar may find—what never happens in Scotland—no house at all. In good old times a London advertising-agent would puff off an advowson as ‘without a house.’ It allowed non-residence, and was a better bargain. Now, on a vacancy, the Bishop has the power of enforcing the incomer to build,—one of the most salutary of recent Church reforms. The sources, however, of the English clergyman’s income have more frequently perhaps than with the Scotch minister the safeness of multiplicity : if one fails, another is likely to hold true. He has something of his own, something of his wife’s ; so, dilapidations agreed upon, the new incumbent throws out a bow, furnishes his drawing-room, and settles for life. Since Waterloo—unless Sebastopol turn the tables—the black coat has had the pick of the matrimonial market—the great test of the social position of a class or an individual. Clerical matches in England are invariably, in some or other of the matrimonial eligibilities, in the gentleman’s favour. And hence probably, from the wife’s side, the too ambitious aim in ‘society’ in which the clergy are wont to indulge. Their high social position, in its right sense, is beneficial to themselves and their flock, but in its worldly, fashionable meaning it is quite out of place, and positively harmful, for their official claims are thence over-looked. In those counties where squire-parsons and large family livings abound, the influence is simply secular, and the poor vicar and temporary curate gain little hold. In the hardworked, underpaid manufacturing districts the office has the highest honour. It is as the clergyman that he is there noticed and respected both by rich and poor ; and though often of humble birth, he holds his rank irrespective of his own or neighbour’s income, though probably not without some reflected gentility and influence from his richer brethren elsewhere.

* In rural districts, while all things have advanced, nothing has advanced so rapidly as the social position of the clergyman. Think, without Mr. Macaulay’s exaggerations, of what the village parson was a hundred years ago. Compare Dr. Primrose and your own rector. The new-married curate of these days starts with more silver-plate than would have sufficed to furnish the whole

whole house of his father,—seldom now leaving a vacancy for the testimonial teapot. The ladies claim equal rank with the squire's wife and daughters; they admit no condescension from the Hall—the vicar's bride, perhaps, having just quitted an equally aristocratic home. If they have good connections and a second horse, they expect to visit the county families. Seldom are the upper farmers and lower professionals hanging on the skirts of gentility, frankly welcomed and visited. Where there is but a limited circle of the better class of residents the intercourse is confined to the neighbouring clergy, and a series of crowded, ill-dressed, ill-afforded dinners is continually interchanged.

We are far from wishing to decry neighbourly intercourse; we would extend and improve it. Hospitality is a Christian virtue, and the Almighty expects from us a cheerful countenance as well as a strong heart. But is this really the spirit—and we put it to the whole of the middle classes as well as to the clergy—of the ordinary dinner-party, without which no respectable gentility is supposed to be maintained? It is a mere thralldom of tyrant custom, now waxing past endurance, oppressive alike to host and guest. Poor Theodore Hook's satires have not abated the nuisance, but only increased the preparatory mysteries. There is a more serious aspect: the amount of concealment and reserve in the mistress of the establishment necessary to pass off, in a three-servanted house, a regular set dinner as an easy matter-of-course thing—(and without this feeling what pleasure is there in a feast?)—is, as our reverend instructor in 'Clerical Economics' would say, 'simply awful;' and who really enjoys the hot-peppered soup, the cold-napkined fish, with thick mutton-chops and stewed celery for side-dishes? Aesthetically, dinner-giving is a work of high art, and should no more be looked for or coveted in the parsonage than a Raphael or a Murillo. From the liveried stable-boy to the rhubarb-champagne the whole is a sham. The plague, as we have intimated, affects the whole middle classes, but from the smallness of their means relatively to their social position, the clergy are the greatest sufferers, and their office calls upon them to be the first to break the trammels. We are not calling upon the Englishman to give up his dinner, any more than his trial by jury or his habeas corpus. Let 'pot-luck' and the family party by all means still continue; but let not rational men, or at least Christian ministers, persist in making themselves and their neighbours miserable by dragging them through miles of winter snow, or by marring the better half of a summer evening, to coop fourteen people in a room of as many feet square to eat a costly and indifferent dinner. We are not a gay people, but we are supposed to have common sense, and ought to understand

stand by this time that hospitality is not, as sometimes averred, extinguished, but modified by civilization. The same measure of kindness which in the desert would offer a stranger half a tent would in England guide him to the best hotel. So the hospitality of the parsonage must be developed, in the spirit of the age, and in its proper sphere. The village pastor may now dispense alike with the 'long-remembered beggar,' the farmer's pipe and ale, and the squire's dinner-party; and there is opened to him a sphere of true Christian hospitality in school feasts and church anniversaries which it warms the very heart to think of. Here is the true solution of the question of National Holidays, so well and amiably brought forward by Lord John Manners. No doubt the last half-century was miserably deficient in public sports and pastimes. All joy was darkened, the mirth of the land was gone. Royal proclamations had failed to revive Whitsun-ales and May-games and Morris-dancers. People will not be merry by rule. The time of commercial Fairs had passed, and the pleasure-day had sunk into senseless debauchery. Zoological gardens are now taking the place of locomotive menageries; and giants and dwarfs are being narrowed to their true dimensions. The attempt to revive the mediævalisms of tournament and May-pole was well meant, but it was tying leaves on a dead tree. Then sprung to light the happy thought of school-festivals. It combined all that was needed. It was natural, novel, it embraced rich and poor, young and old, promoted the educational movement, debarred excess, was easy, inexpensive, and real. Religion, intellect, and mirth were in graceful combination, and the honour done to little children conciliated all minds but the most churlish. It is one of those silent changes that has so insensibly crept into our common life, that many will hardly believe school-feasts to be a custom of scarcely thirty years' standing.

There is no amount of variety and development to which these feasts may not be extended; and if England is ever to be merry England again, this is beginning at the right end. You cannot thump into a clodhopper of thirty to 'be funny' or to play at cricket; but give your schoolboys bats and footballs, and there is no fear but that clubs and matches and cheers and laughter will all follow in due time. It is the simplest and truest restoration of 'the good old time'—perhaps indeed the first real embodiment of that mythic period—

' When all the village train from labour free
Led up their sports beneath the spreading tree,
While many a pastime circled in the shade,
The young contending as the old surveyed;

And many a gambol frolicked o'er the ground,
And sleights of art and feats of strength went round.'

At such times all debasing tricks, however time-honoured, should be eschewed. Grinning through a horse-collar, dipping the head into treacle or flour, greased poles and pig-tails, have lost their wit; and the people of Huddersfield were right in principle, though ridiculous in the inflation of the protest they drew up against such mockeries.

School-holidays, like juvenile parties, are always a capital excuse for the animal spirits of the oldest and most formal. It is astonishing on such occasions how the coldest and stiffest personages come out, who at another time would be horrified at being natural and putting aside their company manners. And then lords and ladies can really enjoy a race with wheelbarrows, or on hobby-horses, or in sacks, as heartily as the villagers themselves, and farmers' wives make such good tea, and the poor and children are so easily pleased with great people looking on, and the school-teachers become of such importance, and everybody gets so mixed up with everybody, that while people are sighing for some visionary revival or importation of national mirth, they forget that they have already got the substance among them, without any of the licence that we well know accompanied the merry-makings of old.

Let advantage be taken of the anniversary of a church consecration or restoration, of a school-opening, or the occasion of an important marriage or birth in the parish, to connect it with some event that may call forth faith, loyalty, or kind feelings, get a few poles, ropes and swings, kites, a trap-bat and a ball, hide some eggs in the bushes, send up some fire-balloons and finish with a red light, and a whole village may be made happy and the influence of the parson be enhanced without losing his position. A mere ring of children linked together and moving round, will keep up fun for half an hour; and we have seen a whole school rest from its sports, riveted for a like period by a good story told in solemn and *Æsopian* style. There must needs be music and flags, and consequently a procession; and the good parson will not fail to begin the day with prayer. Let no one sneer at this English way of getting to the heart through the play-ground or the stomach; for it is mainly through the heart that the soul is reached, and this end would justify the means; but in truth, it is the kindness of the bidding, not the costliness of the supper, that wins the guest.

These entertainments, however, are hardly suited either to the means or the temperament of the Manse. Yet there the ceremonial dinner

dinner is equally oppressive as in the South. Our worthy minister groans over the grievance.

‘Whilst there is nothing more pleasant than to dine with a friend, there is nothing absolutely more painful than to sit down to a board with the slightest feeling that there is before your eyes more than your friend ought in prudence to produce. Upon the whole, these large parties should be managed with caution; not because they give a world of trouble and intense anxiety, or even because they are very expensive, but because they are not very creditable to clergymen to happen very often. Make ceremonial dinners, on the whole, seldom and somewhat select. Keep, of course, the more distant visitors for the night; and break up your friends into sections, and have more family parties. Let an old friend or two remain to take, at an earlier hour next day, another slice of the round of beef, *alias* “the Cold Moderator” as it is called. Indeed, the dinner on the second day is generally the best of the two.’

The Scotch minister’s hospitality bears a much greater proportion to his income than does his Southern brother’s. The saying goes, that the farther North a man travels, he finds the churches grow smaller and the manse larger. Certainly an Englishman would shrink from courting many guests, although he was possessed of twice the means with which a Scotchman welcomes you to his heart and hearth. This, however, necessitates a thrift to which we are strangers. Though the time is past, it is but just past, when, even in royal burghs, the public crier proclaimed through the street, to the sound of his bell, or the tuck of his drum, that the flesher was prepared to kill a sheep—that the minister, the provost, and the town-clerk were each to have a leg of it, but that unless some other body appeared to bargain for the remaining quarter, the sheep would be ‘sent back to the burrow roods.’ But our clerical economist even now recommends four neighbouring ministers to purchase ‘in the back end of the year, a mart to be quartered among them;’ and so, in due season, with the calves and sheep; a lamb he allows to a single manse, on condition of there being such a safe as shall keep meat for three or four weeks. The barrel of salt Orkney beef at 4*d.* a pound, and a firkin of Lochfine herrings, with a couple of pigs, and the barndoor fowls and eggs, are to keep the pot boiling for the rest of the year; but when the pig is killed, and the spareribs are eliminated, ‘don’t forget to send one to your friend in town, who gives dinners at the time of the General Assembly.’

Pay for all, cash in hand—‘grip for grip.’ The retail dealers find little favour with our friend. A box of tea may be had, with the assistance of a friend at Leith, for something under 20*l.*,

and at about 4s. 4d. per pound. Here the copartnery may again come in, as also in your half pipe of port wine; soap and candles should be had from the manufacturers; of the latter, those made in the spring months are the best. Let the soap be cut into convenient pieces when it comes home, and left to dry till used. This hardens it, and makes it go farther. A good store of sago should be always kept for making porridge, scones, or bread mixed with meal or flour, or taken by itself.

Tea sosses are not to be endured in the manse kitchen, but porridge is to be the order of the day; cupboard lovers are to be guarded against, but others, treated with a kindly consideration for human infirmity, are spoken of in phrase that calls up to mind the o'er-word of many an old Scotch ballad. Our minister puts no trust in locks and bars, except, contrary to the burglar's advice to Walter Scott, patent ones at fifteen shillings. 'Locks on the doors of a manse are, practically speaking, of no earthly value, unless to keep out cats and honest folk.' The man servant is to be married, or you need expect no work from the two maids during his hours of breakfast and dinner; and perhaps even shortcommons of butter and cream for the parlour. A *wiselike* and substantial house may be built for him for 20*l.* at the corner of the glebe.

'Let it be the general rule in the kitchen that there be neither wasting nor wanting. Where there is plenty of everything, let there be no want of *thrift*; let there be both planning and plenty. And remember, that dinners made on a shift of bread and cheese and the like, are always the most expensive, and the least satisfactory. They are unavoidable at times, but the seldomer the better. Let always a small store of everything be left in the care of the servants, and the main supply under the lock and key of the lady. Let the lady when in the kitchen *never seem to be ignorant of anything* [a large draught this on the assurance of Southern curates' wives,] and let her learn as fast as she can.'

Some excellent rules are given for the treatment of servants, with due warning not to allow them to get the upper hand. There is the old complaint, as old as *Adam*, of the disappearance of 'the constant service of the antique world,' but it lingers in many a manse and parsonage yet, and where wanting, tells generally as much against the master as the servant. Nowhere are domestics more faithful than, in Scotland, and nowhere more masterful and domineering—perhaps from the general smallness of the establishments; for servile tyranny wanes with the increase of the household, though the many-headed establishment, in a thousand torturing ways, more than counterbalances the bearable despotism of a single paternally ruling servant. The 'minister's man,' both
North

North and South, is a person of no small importance, holding the character of half the parish in the breath of his mouth.

‘Like Sampson Carrasco, he must be sound of body, strong of limb, a silent sufferer of heat and cold, hunger and thirst, and endowed with more than those qualifications which are requisite in the squire of a knight-errant. He must have a good temper, and be patient of reproof. He must combine in his own person the offices of steward, ploughman, carter, cattle-keeper, gardener, and, it is said, in some parishes of bellman, gravedigger, and precentor. He must be able to sow, and put up stacks, to thatch on an occasion, and to build up dikes any day in the year when they happen to tumble down.’

Groom, gardener, shepherd, crier, sexton, and parish-clerk are not seldom combined in a Southern pluralist; but we fear we could hardly find, as in the North, dairymaid, cook, and cattle-maid all in one; or ‘house, table, and nursery maid’ in another, though the ‘bit laddie’ who undertakes the offices of ‘herd and stable-boy, boots, waiter, and runner to the post-office,’ may be found in the genteeldest English rectory designated by his mistress with the name of ‘Page,’ and by the profane, ‘Buttons.’

But what of the minister’s horse? More necessary in the North, where the wide-scattered parishes, the calls of the presbytery, and the absence of handy railroad stations, make it an indispensable adjunct of the manse; according to Lord Meadowbank, ‘one of the *essentialia* of the minister’s position.’ He must be a perfect paragon, combining four horses at least in one. ‘He must be a saddle-horse, gig-horse, cart-horse, plough-horse, all combined, thus uniting gentility, agility, docility, and strength.’ ‘He must have something of stature and symmetry, with a good cargo of bones compactly put together. He must be hardy, sharp-sighted in the dark, &c.—he must not kick, bite, or eat saddles when standing in the same stall with a neighbour;’ and not only must he carry the whole family in the *shandry*, but by a strange necessity—more custom than law—he must be ready to turn out of his warm stable at any moment, to convey to the next parish any passing pauper. The history of the transmission of a poor widow in a cuddly cart, from Glasgow to Dunbar (*Cl. Ec.* p. 96), is a curious morsel of pauper and parochial economics, bearing hard upon the minister and his horse, which we commend to the notice of the grievance-mongers of Scotland.

Not unconnected with the minister’s horse is his wife; for a change in the stable pretty surely follows the change in the parlour; the showy animal on which he witched the village with his bachelor horsemanship, must give place to the useful drudge. And here again, in the wife, is one of the minister’s *essentialia*, that which would be deemed advisable in the South being in the North

North an indispensable. Queen Elizabeth greatly disliked marriage in her bishops, modern bishops in their charges recommend it to their clergy; our Scotch minister insists upon it, especially in relation to our present subject. 'Go, marry, Sir, and know before you die what the words comfort, kindly feelings, and clerical economy mean.' With more justice and deeper relish he lays on upon clerical Coddles.

'Instead of yawning over a book as your dumb and daily companion, smile rather on the faces of a blooming and joyous family, as the only way to make home a place of rest and happiness. Furnish your manse as you may, with easy chairs, sofas and settees—have a vapour, a shower, and a plunge bath, cold, warm, or tepid—have a snug porch, and a green door with a fawn-light—and a stove in the lobby, with a flue of heated air up the main staircase to the top—have a roaring fire in the parlour every morning before breakfast, with all sorts of antique fire-screens, large and little—have a fiddle, a solitaire, a tobacco-pipe, or a set of stocking-wires to vary your occupations—when you go for an hour to snuff up the east wind, put on your cork soles, overalls, and dreadnought—go to bed at midnight, or long after it, and rise far on in the afternoon, when the day has been well aired. Have all this, and four times more; but still, my good friend, so long as you want the WIFE, there is a coldness, a formality, and a prim correct sort of bachelorship in the whole affair, which, happily, is never to be found when there are three or four boys romping about.'—p. 61.

These self-indulgent dallyers in the primrose path of creature comforts deserve indeed no quarter. We have known such an one, when summoned on a winter morning to christen a sick child,* excuse himself on account of a bad cold, and sending for the moribund candidate, baptize it in bed. No wife would have permitted such an aspersion. But there are comfortable husbands also, too apt to merge clerical duty in matrimonial convenience; and this knottiest of all points in Christian economics remains pretty much as St. Paul left it.

Pugin, in his 'Architectural Contrasts,' bore very hard upon the nursery windows of episcopal palaces; but England is too hardened in her Protestantism to be sneered out of such safeguards; his blows more justly fell on the absence of domestic chapels, and on the secular and fashionable air of modern clerical dwellings. A little return to mediævalism here might not be amiss. In what country but our own could the Erastian leaven of the last century have gained such hold upon this, that a professedly reforming Commission deemed a country gentleman's life the type of a bishop's position, and allotted him parks and Italian villas in place of the palace under the wing of the cathedral? In ~~one~~ city where the fine architectural remains of the episcopal palace on the brow of the height that surmounts the town, seemed to mark
unmistakeably

unmistakeably the bishop's home, this hallowed spot has been abandoned, and a modern demesne has been laid out, at immense expense, at a distance that entails most serious hardship on the clergy who have to wait on their diocesan, and necessarily prevents his regular attendance at the services of his cathedral. If, instead of chiding clerical cricketers, he would return to the home of his predecessors, he would be giving the best practical enforcement to his just denunciations of his non-resident clergy, and doubly gild, as a bishop, the good opinions he so honourably gained as a parish-priest.

The value of episcopacy socially, and with that aspect only we are now concerned, was never more recognized than at the present time. America even feels its importance; the highest class of Scotland would be churchless without it; while this element, which has been regarded by shallow religionists as the incubus of the Establishment, has proved its life in the colonies.

But if the economical welfare of the whole Church demands that for the highest rank of laity there should be a corresponding rank of clergy, yet the spiritual peer has socially a distinctive office and domain of his own; he may need a large income, and spacious halls and suites of dormitories; but he wants preserves, and manors, and gamekeepers, neither for himself nor his friends. The bishop should still be the public entertainer on the occasion of charitable or religious gatherings, or have 'public days' for his clergy less exclusive than were those of Lambeth, where a priest of the diocese of Canterbury would have found himself strangely out of place amidst the court dresses of London notables. It would be pleasanter for the clergy to meet their bishop in his own hall, than to pay for their glass of bad port at the Visitation dinner. The Bishops of Oxford and Lincoln have already made arrangements for the reception under their own roofs of their candidates for ordination—the only good that has accrued from the distance of their palaces from the cathedral city. Beyond the pale of his office there are social duties which shine with peculiar grace when cheerfully and voluntarily undertaken by a prelate. The Bishops of London and Manchester have put themselves at the head of the sanitary reforms in their own cities, and in every movement made for the advance of science, or literature, or art, there should the diocesan be found in the van, and there would he be most warmly welcomed. Heartily identifying himself with objects that interest the people, there is an appropriate secular sphere for him to move in, which, far from derogating from, would enhance his sacred character. It might be well for the Dunstons and Savonarolas of old to denounce all profane learning, and set up the spiritual life after their own austere pattern as the only

only exemplar for the laity, and the only fit object of clerical care. They, in that their day, did the work of earnest and consistent men. But a modern prelate, who is allowed, without envy or gainsay, the luxury of wife and wine, of couch and carriage, must not plead that he is stepping out of his sphere, in promoting secular civilization, and in fostering the arts that smooth and beautify life, lest he be chargeable with a self-indulgent heart, and a covetous hankering after good things which he would deny to his less fortunate neighbours. It is strange how many, of the more precise school, who, in their abnegation of 'the world and the things of the world,' pride themselves on their indifference to the progress of secular science and art among the people, are blind to the advantage they are daily taking themselves of every new invention or improvement that enhances their own creature comforts.

The position of deans and chapters in the Church is one purely economical and social. They have no apostolic origin, no spiritual status, no cure of souls. They might be utterly abolished to-morrow, and the Church of England, as a true branch of the apostolic and catholic Church of Christ, would remain in her orders of ministry complete. They have in them, however, a great inherent use; and it is certain that they must at some time have fulfilled the intentions of their founders. Those mighty cathedrals, with all their subtle symbolism and touching imagery, could never have been reared to amaze posterity with mere Pyramidical vastness. The men who built them, and rebuilt them, and enlarged them, and thoroughly furnished them with all beautiful things, must have seen 'living stones,' day by day, and from age to age, springing up from the polished corners of their material temple, or they never would have gone on for five centuries adding pier to pier and story to story, and multiplying their enrichments, till, in the luxuriousness of their refinement, it may be in the surfeit of their pride, they gilded and painted the very lilies of alabaster and marble. We must suppose that, as council to the bishop, as missionaries to the neighbourhood, as the centre and the source of secular and sacred learning, as patrons and fosterers of the arts, as the moving spring of diocesan progress, as almoners to the poor, as educators of the ignorant, as training candidates for the ministry at home and abroad, as upholding the ritual and services of the Church in their most perfect and normal form, especially in the daily offering of high choral praise and thanksgiving, and in opening to the people and preserving with religious love the powerful teaching—the sermons in stones—of that mistress-art which, from the very fact of its unconscious influence, has indeed, of all arts, the firmest hold upon the popular mind,—we must suppose that there was a time when,

when, in these and other ways, the cathedral chapter took its due and allotted portion of work in the Church's economy, and so gained the favour of benefactors and the love of the community. How else would those towers have risen in their glory? how else have been preserved when monasteries and abbeys fell?

And even when the freshness and vigour of youth had departed from the system, there was much that yet remained in the sere dignity of its decay, which, though the articulate speech and language of life was fled, yet lingered as an echo in the cloisters still. The effect of the presence of a Gothic cathedral rearing its venerable head in the midst of an English city is well described by Mr. Ruskin.

‘ Let the reader imagine himself for a little time in a great English cathedral town, and walk with me to the west front of its cathedral. Let us go together up the more retired street, at the end of which we can see the pinnacles of one of the towers, and then through the low grey gateway, with its battlemented top and small latticed window in the centre, into the more private-looking road or close, where nothing goes in but the carts of the tradesmen who supply the bishop and the chapter, and where there are little shaven grass-plots, fenced in by neat rails, before old-fashioned groups of somewhat diminutive and excessively trim houses, with little oriel and bay windows jutting out here and there, and deep wooden cornices and eaves painted cream-colour and white, and small porches to their doors in the shape of cockle-shells, or little, crooked, thick, indescribable wooden gables, warped a little on one side; and so forward till we come to larger houses, also old-fashioned, but of red brick and with gardens behind them, and fruit walls, which show here and there, among the nectarines, the vestiges of an old cloister arch or shaft, and looking in front on the cathedral square itself, laid out in rigid divisions of smooth grass and gravel walk, yet not uncheerful, especially on the sunny side, where the canons' children are walking with their nursemaids. And so taking care not to tread on the grass, we will go along the straight walk to the west front, and there stand for a time, looking up at its deep-pointed porches and the dark places between their pillars, where there were statues once, and where the fragments, here and there, of a stately figure are still left, which has much the likeness of a king,—perhaps, indeed, a king on earth, perhaps a saintly king long ago in heaven; and so higher and higher up to the great mouldering wall of rugged sculpture, and confused arcades, shattered, and grey, and grisly with heads of dragons and snorting fiends, worn by the rain and swirling winds into yet unseemlier shape, and coloured in their stony scales by the deep russet-orange lichen, melancholy gold; and so, higher still, to the bleak towers, so far above, that the eye loses itself among the bosses of their traceries, though they are rude and strong, and only sees like a drift of eddying black points, now closing, now scattering, and now settling suddenly into invisible places among the bosses and flowers, the crowd of restless birds that fill the old square with that
strange

strange clangour of theirs, so harsh and yet so soothing, like the cries of birds on a solitary coast between the cliffs and sea. Think for a while of that scene, and the meaning of all its small formalisms, mixed with its serene sublimity. Estimate its secluded, continuous, drowsy felicities, and its evidence of the sense and steady performance of such kind of duties as can be regulated by the cathedral clock: and weigh the influence of those dark towers on all who have passed through the lonely square at their feet for centuries, and on all who have seen them rising far away over wooded plain, or catching on their square masses the last rays of sunset, when the city at their feet was indicated only by the mist at the bend of the river.'—*Stones of Venice*, vol. ii. p. 62.

We acknowledge the power of this fine passage as much as the influence of the fabric itself; but has not this enchantment been greatest in the more distant view? Is it not the precincts on which the *shadow* falls? When we look back three centuries for the church-work done by the cathedral bodies, and consider which of those offices we have suggested above they have even nominally discharged, are we not reminded rather of their 'drowsy felicities,' than even of the 'steady performance of such kinds of duties as can be regulated by the cathedral clock?' Even in their first and easiest duty—the attendance at the services—how utterly heartless and formal (to speak generally, and allowing for many righteous exceptions) has its *performance* been! how slovenly and irreverent the conduct of the choir: how unrubrical and irregular the model form! As to educational or social benefits dispensed, it were best to repress the strong language which such a review might call forth. For education we will not take Rochester as the exemplar; but, for social good, let the almost universal alienation of the people from the Church in cathedral cities tell its own tale. No where is church feeling so stagnant and dead; no where dissent more rife; no where less love of art; no where less appreciation of the glory of the Church's services. And these cathedrals, which, if for anything, were surely expressly built for the people, have been, and many to this day are, locked against neighbours as well as strangers, and their doors tardily opened even for divine service, lest worshippers should take advantage of the opportunity, and by a lingering stroll of preparatory meditation, or too curious observance of the founder's workmanship, rob the vergers of his expected fee.*

* The dean and chapter of Peterborough, the first we believe of provincial cathedrals, have lately opened the cathedral without fee. Since the change, the damage done in nine months has been estimated by the cathedral mason at two shillings; the visitors have increased, by the vergers' record, tenfold. Other cathedral bodies are meditating the like step; but that this is a fact to be recorded in this century is quite enough to account for the value which cathedrals hold in popular appreciation.

Socially,

Socially, the chapter are generally at war with the parochial clergy and the citizens; and, jealous of privileges which they do not really appreciate, throw every obstacle in the way of the people enjoying what, with deference to capitular dignity, we beg to call *the people's cathedral*.

Are we, then, to sweep away our cathedrals with their ecclesiastical corporations? No more than we would, for their past delinquencies, abolish the Guildhall with the mayor and aldermen of London. The cathedrals may be yet made the very centres of religious light and life and action which we require. Round them should cluster our theological and missionary colleges, our training institutes for schoolmasters and schoolmistresses, and our normal schools; the ancient grammar-school of the chapter should be a model to the county; the modern church middle-school, which we so much need, should emanate from them; their library should be the clerical library of the diocese; their lay-clerks and choristers should form a choral college, where the village organist and singers might be sent to learn, and whence might issue an organising choral master to inspect and reform the parochial choirs. A retreat for the disabled pastor, a home for his widow, a school for his orphan, should here be found. The cathedral itself, in its architecture, arrangement, and service, should be the model-church of the diocese; setting an example how order may be carried out without innovation, and art be ennobled in the cause of religion without superstition. There should the gates of the Lord's house lift up their heads, and be ever open for private, or for public prayer. There, at great festivals and at the Church's Jubilees, should the clergy and laity be gathered, and the long procession might thread the now useless aisles, and the cold and empty nave be peopled, if not with worshippers, at least with hearers.

So far, then, from reducing the present staff, it is rather the restoration of suspended stalls that we require. It is not that there is no work for the cathedral body to do, but that they have so long and so utterly neglected it, that they as well as the people have forgotten what it is. If cathedrals are to be preserved at all, the old capitular traditions of the last three centuries must be utterly set at nought. They cannot continue as mere retreats of dignified ease and 'drowsy felicity,' to eke out the incomes of the relations of bishops and prime ministers; not as rewards for political support, nor even for public, ecclesiastical, scholastic, or literary services. These additional recommendations should of course be respected; but the main object should be to find men fitted for the place. Not what they have done elsewhere,

elsewhere, but what they can do here, should be the qualification. The mode of appointment must be altered; or such offices attached to every stall as only fit men would be induced to fill.* Without the cure of souls, they must yet not be sinecures in the economy of the Church, but, as at Oxford and Ely, have such distinctive and popular duties assigned them as will recover the regard of this working and work-appreciating generation. Then may the influence of those mighty fabrics be again felt by those who dwell under the shadow of their wings, the very spirit of the building, if no higher motive, may animate their labours of love, and, *because of the House of the Lord their God*, they may seek to do their brethren good.

It is only between the *parochial* clergy of the North and South that a comparison can be drawn; and it is of them, chiefly in their relation to society, that we have now to speak. If the social clerical position in England may seem too high, in Scotland it is unquestionably too low, though great symptoms of amendment in this respect are visible, and the lairdocracy have become of late much less exclusive and pretentious. But it is a settled article of at least lay Presbyterian faith, that to have a *pure* kirk it must be a *puir* kirk; and there is great jealousy of the minister being encumbered with too much of this world's goods. That equalisation of income at which short-sighted reformers of the English Church are driving so rapidly and so rashly, is insisted upon by Dr. Aiton as one of the greatest evils of his ecclesiastical system. The aggregate income of the Kirk seems indeed small compared with that of the Church of England—in round numbers 230,000*l.* to 2,650,000*l.*—but when divided among

* It seems the simplest and most practical course to increase the archdeacons to the number of the stalls, and assign a stall to each archdeaconry. This would almost ensure, for the bishop's own sake, the appointment of competent men; it would allow the abolition of the present vexatious fees at archidiaconal visitations; it would bring all the members of the chapter in direct communication with the parochial clergy; it would make the cathedral the official spring of all clerical movement; the chapter would then really be the bishop's council; and from them a suffragan might be temporarily or permanently appointed. To assign stalls which are held for life to headships and professorships in theological or other institutions, would be only to clog and embarrass the most lively element of Church revival. It is hardly worth while 'to save the cathedrals,' if it is only to be done by binding the dead weight of life-endowment upon educational bodies that are constantly requiring fresh blood and new spirit. Nor is the scheme for attaching stalls to the parishes of the cathedral city, which is said to be in favour with the Cathedral Commissioners at all more desirable. This would be to swamp the diocese in the city, whereas the cathedral is virtually connected with the see, only accidentally with the locality. Such a chapter would carry no weight, as it would have no common interest, with the rural clergy: nor would the Sunday duties of cathedral and parish church be compatible. Four archdeacons, each in six months' residence, and allowed to hold a cure of restricted population, would be far more likely to execute whatever part of the cathedral system is suited to modern times.

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their respective clergy the average is 230*l.* for Scotland, 250*l.* for England; while as the house of the Northern pastor is neither built nor repaired at his own cost, he escapes what is often a most burdensome tax upon his Southern brethren. Considering, therefore, the difference of the general expenses of living in the two countries, to say nothing of the acknowledged difference of station—and considering also that in the Scotch estimate the value of the glebes and some other sources of income were to be omitted, while the English estimate takes in the whole revenue, including episcopal and capitular estates—it can hardly be affirmed that the English clergy as a body are better paid than those of the ‘very poorly endowed’ Scotch establishment. The utmost that has ever been suggested as the stipend of the English clergyman from the improvement and redistribution of the whole Church property is 300*l.* a year: and under such an arrangement would the clergy be better satisfied, or the people better served? On the clerical side it is a curates’ question, and to their decision it might safely be left—and that, not because, as is sometimes urged, a young man looking to holy orders prefers the professional lottery of blanks and prizes to a steady moderate certainty (for the very reverse is found to be, even injuriously, true in all other more mundane callings; and the sin of ambition, if now a churchman’s vice, runs rather in the line of the pulpit than of the purse), but because the poor clergyman is instinctively conscious that by such an equalisation he would lose more as a member of a class than he would gain as an individual. The social status of the English clergy is the chief worldly attraction that recruits its orders; and this cannot be maintained without gradations of rank and means. It may be that, for spiritual purposes, they are now drafted too exclusively from the higher classes; but this at least gives the people at large a less costly church; for, under the present system, more than one-half of the actual income of the clergy, by which so many of our charitable institutions are mainly supported, is derived from the private fortunes of individuals, who under no other régime would be found to enter holy orders.

In Scotland the number of ministers with good private fortunes is extremely small; and the class from which they are drawn would not satisfy the wants of the English people. The most remote colony, the most obscure village, the most upstart town, each looks in their pastor for a *gentleman*; and they must be very extraordinary powers that can make up for the want of this qualification for pastoral influence. This is hardly sufficiently considered by those who in the present day are advocating an inferior

inferior order of clergy, and who argue in favour of it from the success of the local preachers among the Methodists and other dissenters. Simply as preachers, these men may have a popularity, but as guides and pastors they are without influence among their people. They are the slaves, not the shepherds of their flock. Now the efficacy of preaching is not what it once was ; and every year its real power in turning the hearts of the disobedient to the wisdom of the just will become less and less. Books work more conviction than sermons, and, more than books, do example, converse, a sense of interest taken in them, insensibly influence the opinions and lives of the masses. The mission of the Church at home is no longer a preaching in the wilderness ; it is at the marriage feast, in the nobleman's sick chamber, at the publican's house, with Martha and with Mary, that it has to make its way. It is as the leavener of the whole mass of human society, more than as the promulgator of unknown truths, that its present path lies. It is more the vice than the ignorance that has to be reached in our large towns, and the clergy are the moral police to detect and correct it. The present influence of the Church of England is such as cannot be estimated by the numbering of the sitters within her walls on any given Sunday. Her services may not be so fascinating to the eye or so tickling to the ear as what may be elsewhere obtained ; but to whom does the Irish Romanist entrust his money in his prosperity, and the English Dissenter confide his cares in his sorrow, but to the Anglican parson ? It is the statesman's deepest interest to maintain the clergy in this position ; for it is his cheapest and most effective means of humanizing and civilizing the lower orders.

Both priests and people of England, if they are wise, may well be content on the whole with their present normal relations. There are shortcomings to be made up, and blots to be removed ; but it is something, in these pushing, marching, money-making times, to have the exemplar of a man who, on the humblest means, can hold good his standing in society, and show the world the happiness attainable from the contented and moderate use of those blessings which the progress of civilisation is daily placing more and more within the reach of all.

The railroad and the penny-post, to go no further, give the poorest man real benefits which princes could not command twenty years ago ; and the tendency, not of this age only, but of all time, is to enlarge the privileges of the few for the good of the many. Thus while the actual distance between the wealthiest and the poorest is diverging daily, the amount of enjoyment to be derived from their respective means is being daily equalised,
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and the element of disaffection to which the former fact gives rise becomes neutralised by the latter. This is a hopeful view of human society, and it only requires a fairly contented mind, and one ready to take things at their true value, to realise it to its full extent. No one has more reason to be satisfied with his social position and his sphere of action than the English parson. He has a recognised status. His class is made for him. He has no higher platform ever dancing before his eyes, upon which, if he could only make good his standing, he thinks his happiness would be complete. It is no derogation to him that his wife does not go to London and is not presented at Court. George Herbert's rule for the country parson's wife's practice may be extended beyond domestic medicine. 'For salves, his wife seeks not the city, but prefers her garden and fields, before all outlandish gums.' He has not a thousand doubts where he shall settle, and what sized house he shall venture on, for the sake of his family. His own particular home and income are made for him, and the extent of each being known, he is never expected to live above his means.

'The pastor,' says George Herbert, 'is the deputy of Christ for the redeeming of men to the obedience of God.' 'The faithful minister,' adds old Fuller, 'endeavours to get the general love and goodwill of his parish. This he does, not so much to make a benefit of them, as a benefit for them, that his ministry may be more efficient; otherwise he may preach his heart out before he preacheth anything into theirs.' And in these days more than ever, when the authority of the Church as the living oracle of God's truth has become so faint, its influence will be maintained more by the lives and character of its ministers than by their office. It has always in a measure been so, but much more so now. The really earnest and zealous pastor gains ground in time, wherever he is and whatever his doctrinal views may be. But this influence, from its very nature, cannot be the work of a day, of a lucky accident, of a brilliant talent; it is the work of grace, and so of growth, of steady consistent perseverance, of the single eye and heart, of a judgment that discerns between the sin and the sinner, of an interest shown in many things which are not strictly within the priest's office, of going about doing good. Nor, though mixing with his people in temporal as well as spiritual things, need he secularise either his employment or enjoyments. The State may gain, but the Church loses, by clerical magistrates; and even in the midland counties the sporting parson is disappearing, or in disrepute.

How greatly the wife and household help or mar parochial work, though coming fairly within our subject, is beyond our present

present limits to discuss. The curtained pew in the chancel has had its evil day; but woman's hand was among the first to pull down the high places of pride, and her eye to welcome the dawn of the better day of church revival; and in estimating whatever hope there may be of recovering to the Church of England the multitudes it has lost, it must be remembered that, though the wife of the English clergyman has cut away from the Church the devotedness of the Roman celibate and the personal acceptability (from his being more on a level with his congregation) of the dissenting preacher, yet she has established for her husband that frank confidence and common interest in domestic life, and that honourable social position, which, though they have less immediate power and popularity, have, if rightly used, more real influence, and so, in the end, more certainty of doing good.

It may be a prejudice, but we cannot detect the same hopeful symptoms of the Kirk recovering the footing she has lost. Her ministers have not that social weight, the want of which must tell doubly against a married clergy; and the testimony of Adam Smith, given fifty years ago, that 'the most opulent Church in Christendom does not maintain better the uniformity of faith, the fervour of devotion, the spirit of order, regularity, and austere morals in the great body of the people than the poorly endowed Church of Scotland,' has been severely shaken in its first assertion by the late lamentable secession of the Free Church. The political and moral view that the great economist took still mainly holds good; but the late unhappy schism has shown more than ever the utter helplessness of Presbyterianism to maintain the uniformity of faith. In a Church with so much apparent independent action, with so little scandal from worldly opulence, with a ministry taken from the ranks of the people, with no liturgical trammels, simple in its ritual to very nakedness, it might have been supposed, according to modern Church reformers, that, having once a hold on the judgment and affections of the people, there was no room for Dissent, except from fundamental differences of doctrine. The very reverse has proved true. The varieties and ramifications of Dissent in Scotland infinitely outnumber, while they include, all its English phases. Burgher and Anti-Burgher, United Presbyterian and Reformed Presbyterian, United Original Seceders, and a thousand other distinguishing titles would require Scotch law and metaphysics, as well as theology, to mark the difference to a Southern mind; and now to these, on a point which might possibly have been arranged but from inherent tendency of the Presbyterian scheme to division, the Free Kirk is added.

- ART. VI.—1. *On Warming and Ventilating; with Directions for Making and Using the Thermometer Stove, or Self-Regulating Fire, and other New Apparatus.* By Neil Arnott, M.D., F.R.S., &c. London, 1838.
2. *Journal of the Society of Arts*, Vol. II. No. 77. *On a new Smoke-Consuming and Fuel-Saving Fireplace, with Accessories insuring the healthful Warming and Ventilation of Houses.* By Neil Arnott, M.D., F.R.S., &c. 10th May, 1854.
3. *A Rudimentary Treatise on Warming and Ventilation, being a concise Exposition of the General Principles of the Art of Warming and Ventilating Domestic and Public Buildings, Mines, Lighthouses, Ships, &c.* By Charles Tomlinson. Published in Weale's 'Rudimentary Series.' London, 1850.
4. *Practical Remarks on the Warming, Ventilation, and Humidity of Rooms.* By Francis Lloyd. London, 1854.
5. *Some Account of Domestic Architecture in England from the Conquest to the end of the Thirteenth Century.* By T. Hudson Turner. Oxford, 1851. *And from the time of Edward I. to Richard II.* By the Editor of the 'Glossary of Architecture.' Oxford, 1853.

IT is mid-winter: cold, dark, and dreary without; warm and cheerful within. Seated by the side of the family hearth, the lover of home pleasures may now for the first time enjoy the luxury of an open fire without its usually-attendant inconveniences. This result, which is due to the inventions of a scientific physician of our own day, forms a successful supplement to the labours of ingenious men of past ages, who have devoted their talents to improving the domestic comfort of their fellow-creatures, and thus diminishing or cutting off some of the numerous sources of disease. And if the use of fire may in itself be considered as the distinguishing physical characteristic of man (the most savage nations being adepts in the use of the 'fire-stick,' while animals, until domesticated, have a dread of flame), then must we also consider in the light of benefactors all those who enhance the value of the gift, by bringing it more completely under our dominion, whether for the requirements of the arts, science, and commerce, or for the not less needful purposes of home comfort and healthful enjoyment.

' Now stir the fire, and close the shutters fast,
Let fall the curtains, wheel the sofa round,
And while the bubbling and loud hissing urn
Throws up a steamy column, and the cups
That cheer but not inebriate, wait on each,
So let us welcome peaceful evening in.'

This passage, from Cowper's 'Task,'* owes its popularity to the delightful associations it calls up. Convert 'the fire' into a dull, dry, irradiant stove, and the charm is dissolved. We may heat our public buildings and churches with steam or with hot water, but we must leave to the German or the Russ the pleasurable ideas connected with such sullen warmth in living apartments. The enjoyment of the open fire is even too deeply seated among Englishmen to be greatly disturbed by its ordinary defects. Every house has its annual chapter of accidents or annoyances: fuel is wasted, chimneys smoke, dust is increased, soot accumulates, perhaps takes fire, property is destroyed, children are burnt to death; while it cannot be denied that rooms are unequally warmed and badly ventilated, faces are scorched while feet are freezing, and, except for those in the immediate vicinity of the hearth, there is little warmth or comfort in many a room which bears the outward semblance of both in its cheerful open fire.

In treating of the history and philosophy of 'the open fire' it is impossible to pass by altogether the material which feeds it. It would be an interesting inquiry to trace the influence which the scarcity or abundance of fuel has exercised on the moral and industrial condition of the various countries of the earth; for it cannot be doubted that the ease or difficulty with which fuel is procurable has a considerable effect in promoting or depreciating the health and personal comforts of nations, and that these, by a reflex action, contribute greatly to the formation of national character. Where fuel is scarce houses are small, and their occupants crowded together; the external air is as much as possible excluded; the body becomes dwarfed, the intellect dull. The diminutive Laplander spends his long and dreary winter in a hut, heated by a smoky lamp of putrid oil—an arrangement which afflicts the whole nation with blear-eyes. The hut of the Greenlander is larger and better contrived, but is often peopled by half a dozen families till the air becomes so contaminated that, as a traveller remarks, 'the smell strikes one not accustomed to it to the very heart.' The lace-makers of Normandy work by night in the sheds where cows are tethered for the sake of the steaming warmth afforded by the animals. The lace-makers of Nottingham, some years ago, were accustomed to assemble in winter, to the number of fifteen or twenty, in a small room, braving the effects of a poisonous atmosphere to enjoy the solace of the heat engendered by their breath. Such a scarcity of fuel as these usages imply is always accompanied

* One of the most beautiful gift-books which has appeared this season—one of the most beautiful, indeed, that has ever appeared in any season—is a new edition of 'The Task' of Cowper, richly illustrated by Birkett Forster.

by general wretchedness, personal and domestic. The people lodge in miserable hovels, wear ragged clothes, and take to stimulating drinks to supply the place of well-cooked food. Where coal, on the contrary, is abundant, the habitations are mostly decent, and the people are well provided with necessities. One obvious reason of this contrast is, that when fuel is costly the working-hours of the poor are curtailed in severe weather by their inability to keep up a fire. Men who labour at their own homes, and women who earn money at domestic employments, cannot continue their tasks when benumbed with cold; and are under the necessity of going earlier to bed, and remaining in it longer than they would otherwise do.

Nor need our examples be limited to the abodes of poverty. In the noblest mansions of the cities of Persia a contrivance is adopted scarcely superior to that of the smoky lamp of the Greenlander. A large jar called a *kourcy*, sunk in the earthen floor in the middle of the room, is filled with wood, dung, or other combustible, and when the fuel is sufficiently charred, a square wooden frame is put over the vessel and covered with a thick wadded quilt, under which the members of the family sit or recline, with the quilt drawn up to their chins. The warm, deleterious vapour produces headache, and in some cases suffocation—in all, enervation of body and mind.

Scarcity of fuel has not been without its effects in forming the manners of the polished Parisians, and has transferred to the theatre and the café those attractions which in the British Islands belong essentially to the domestic hearth. While vast forests existed in abundance they were our grand magazines for feeding the fire, and even where wood was scarce coal was neglected, under an idea that its fumes corrupted the air, and exerted an injurious effect upon health. So late as the year 1349, in the religious house at Whalley, in the neighbourhood of the coal-fields, peat and wood were alone employed. The increasing price of wood led to the demand for a cheaper material by smiths, brewers, and others, whose trades required large quantities of fuel, and towards the close of the thirteenth century coal was imported into the metropolis from Newcastle for the use of furnaces. In 1306, however, the King was petitioned to stop the consumption of the noxious article in the city; and accordingly a royal proclamation was issued prohibiting the burning of coal. The royal command being disregarded, a commission was appointed for the purpose of ascertaining what persons used sea-coal (i. e., coal brought by way of the sea to London), with power to punish by fine for the first offence, and afterwards by the demolition of the offending furnaces. As the consumers of coal had by this time learnt its value, and persisted in employing it, a

law was passed making it a capital offence to burn it within the precincts of the city. In the reign of Edward I. a man was actually executed for the commission of the crime. We may trace the prejudice to the close of the sixteenth century. In the description of England inserted in 'Holinshed's Chronicles' (A.D. 1584), it is stated that sea-coal 'beginneth to grow from the forge into the kitchen and hall of most towns that lie about the coast;' and that if the waste of wood continues, the discredited mineral 'will be good merchandise even in the city of London.' Ladies had an idea that their complexions would be injured by entering a room where it was burning; and persons would not even partake of meat which had been roasted at a coal fire. At the commencement of the seventeenth century our ancestors abandoned these fanciful ideas: * they were, however, adopted by our neighbours on the opposite side of the Channel, and were retained until our own time, even if they can now be said to be entirely given up. It is not more, we believe, than a quarter of a century ago that an ambassador at Paris issued cards for a large party, and found to his dismay that only gentlemen attended, the ladies having absented themselves on learning that his lordship warmed his house by means of English coal.

The aversion of our ancestors to coal before the introduction of the chimney certainly admits of excuse. In the time of the Anglo-Saxons

'the fire was kindled in the centre of the hall; the smoke made its way out through an opening in the roof immediately above the hearth, or by the door, windows, or eaves of the thatch. The lord and his "hearthmen"—a significant appellation given to the most familiar retainers—sat by the same fire at which their repast was cooked, and at night retired to share the same dormitory which served also for a council-chamber.'—*Turner: Introd.*, pp. viii. ix.

The strongholds which were erected about the period of the Conquest consisted of several stories, and their roofs were used as a terrace for defence, thereby rendering the central hearth and opening impracticable; but as it was necessary to provide some exit for the smoke, the fireplace was made in the wall, and terminated in a loop-hole on the outside: this was an important step towards the construction of the chimney.

* In the year 1853 there were shipped at the several ports of Great Britain and Ireland, coastways, to the other parts of the United Kingdom 8,835,573 tons of coal, 40,412 tons of cinders, (as coke is called in Parliamentary language,) and 195,269 tons of culm or anthracite, making a total of 9,070,984 tons. In the same year were exported to foreign parts, and British settlements abroad, 8,758,123 tons of coal, of the declared value of 1,507,950*l.*, and 176,939 tons of cinders, of the declared value of 96,641*l.* In the same year the quantity of coals brought into the port of London alone, amounted to 4,026,985 tons, of which 3,378,256 tons were brought coastways, and 653,729 tons by inland navigation and land carriage.

Coningsburgh and Rochester castles furnish examples of this contrivance, which prevailed, without much variation, from the twelfth to the fifteenth century. Until the latter period the chimney, properly so called, appears to have been little known in England, or indeed in many other parts of Europe. The ancient Romans seem not to have been acquainted with it; and there is no trace of it in Italian houses up to the fourteenth century, by the middle of which it had become common at Venice; for an inscription over the gate of the school of Santa Maria della Carita states that in the year 1347 a number of chimneys were thrown down by an earthquake. We learn also that in 1368 a prince of Padua, on making a journey to Rome, took with him masons to make a chimney at the inn at which he put up, 'because in the city of Rome they did not then use chimneys; and all lighted the fire in the middle of the house on the floor.'* But, as Mr. Turner remarks, in seeking to ascertain the antiquity which should be assigned to chimneys, facts are often at variance with the statements of respectable writers. Existing remains prove that perpendicular flues were constructed in England in the twelfth century; yet Leland, writing in the sixteenth century, speaks with surprise of a chimney in Bolton Castle, which he says was 'finished or Kynge Richard the 2 dyed. One thyng I much notyd in the hawle of Bolton, how chimeneys were conveyed by tunnells made on the syds of the walls betwyxt the lights in the hawle, and by this means, and by no covers, is the smoke of the harthe in the hawle wonder strangely conveyed.' We can only suppose, with Mr. Turner, that the principle of the modern chimney was understood long before the construction itself became general. The cost of remodelling the house would, in very many cases, prevent the improvement. In drawings of the time of Henry III., chimneys of a cylindrical form are represented rising considerably higher than the roof, and orders to raise the chimneys of the king's houses are frequent in this reign. Nevertheless, it was still the general custom, even in the fourteenth century, to retain the hearth in the middle of the room. When the wood was fairly ignited the smoke would not be great, and the central position of the fire was favourable to the radiation of heat. This method of warming the hall was continued long after fireplaces with chimneys had been erected in the smaller apartments. By the reign of Elizabeth the advantages of the new system were so well appreciated, that ladies in their visits to their friends, if they could not be accommodated with rooms with chimneys, were frequently sent out to other houses, where they could enjoy the luxury.

Muratori. 'Antiq. Italica,' quoted by Turner.

We may gather, then, that the chimney has been in use for at least five centuries; and throughout that long period it seems to have been constantly employed with a very imperfect appreciation of the physical laws on which its action depends. Probably even at the present day, few of those who erect chimneys would be able to explain the conditions of their successful action; while the learned chimney-doctor often fails in his diagnosis, and rashly prescribes for a malady from which the patient may be free, while neglecting that which would be evident to the eye of the man of science.

It is often supposed either that smoke ascends the chimney because it is lighter than the surrounding air, or that some mysterious power exists in the chimney by which the smoke is drawn up and discharged. That smoke is not lighter than air, the following experiment, devised by Dr. Franklin, will show. If a pipe of tobacco be lighted, the stem plunged to the bottom of a decanter half full of cold water, and the bowl covered with a piece of linen so that it may be blown through without burning the lips, the smoke will descend the stem of the pipe and bubble up through the liquid, and thus becoming cooled it will not rise out of the decanter, but will spread over the surface of the water. This shows that smoke is in reality heavier than air. But the murky cloud, which consists of carbon, hydrogen, carbonic acid, carbonic oxide, vapour of water, and other products, is mixed with a large portion of the air which enters the fire. It is this invisible column of heated air that by its expansive force carries with it the visible and less heated smoke, until it emerges from the top of the chimney, where it encounters the cold of the external atmosphere, loses its ascensive power, and unless some kindly breeze convey it speedily away, hangs like a cloud over the crowded city, or falls in minute particles of carbon, begriming everything below.

That there is a draught to a chimney, is simply due, therefore, to the rarefying influence of heat. The colder the particles of air, the closer they lie together, while they recede from each other in proportion to their heat. It follows that a given volume of cold air weighs considerably more than a similar bulk of heated air; and such is the mobility of the aerial particles, that a slight rise in temperature starts them on their upward journey, and, as they rapidly ascend, the colder particles close in and occupy their place. In the instance of the fire, the first particles of air which come in contact with the burning fuel pass up the chimney, and distribute their heat to other particles in their course, at the same time that fresh air keeps flowing towards the grate to fill up the vacuum. The draught in a chimney
when

when there is no fire is small. Hence it often happens that a room feels colder with a recently lighted fire than before: the stagnant and comparatively warm air of the apartment has fled up the shaft, and the raw outer air rushes in to supply its place before the newly ignited fuel has had much influence.

The action of heat in establishing a current in a chimney may be further illustrated thus:—Let a glass tube, 1 inch in diameter, 12 inches long, and open at both ends, be attached to some fixed support, in an upright position, so that it need not afterwards come in contact with the warmth of the hand. Fasten to the end of a quill five or six inches of floss silk, in order to detect by the stirrings of the loose filaments when held at the upper or lower mouth of the tube, the motion of the air passing through it. If the tube and the air of the room be of the same temperature, no current will be observed; but if the tube be slightly warmed, a current will be found to enter below and to be discharged at the top, because the tube communicates its warmth to the air within it, rarefies it, and makes it lighter than the external air, which presses in from below, forces it upwards, and becomes warm and rarefied in its turn. If a hot poker be fixed a little way below the mouth of the tube, the entering air, heated by the metal, will set in motion a brisker current, which will be maintained with gradually decreasing force, and will only cease when the metal and the tube have sunk down to the temperature of the surrounding air. In this experiment the form of the tube is of very little consequence to the result: it may be crooked or straight, tapering or of equal bore, pyramidal or square; and so with the chimney, in spite of the assurance of the chimney doctor to the contrary. It is true that it may be so badly constructed as to offer considerable resistance to the ascending current; for whatever long interferes with the vertical direction of the shaft will delay and consequently cool the hot air, though a bend is beneficial in the upper part by preventing the sudden descent of wind and rain. In all calculations of the velocity of the draught, an allowance is made for the retardation of the air by friction, which, in straight tubes, is directly as the length of the tube and the square of the velocity, and inversely as the diameter.

Dismissing, therefore, the form of the chimney as comparatively non-essential, we come now to speak of its height, which is of great importance, since an increased height admits of an increased quantity of heated air, and a larger amount of cold air from the room must be constantly pouring in to supply its place. In other words, there will be a stronger draught. So also the fiercer the fire the more the temperature of the aerial column is raised,

raised, its elastic force augmented, and the greater is the demand made on the air of the room. In fact, the ascensive force of the current passing up the chimney is the difference between the weight of the column of hot air in the chimney, and that of a column of the surrounding atmosphere of equal height.

The quantity of air contained in a room 30 feet long, 28 feet wide, and 19 feet high, equals 15,960 cubic feet ($30 \times 28 \times 19 = 15,960$), and as 13 cubic feet of air weigh nearly one pound, the total weight of air in such a room is about 1220 pounds, or rather more than half a ton. Four-fifths of this air consist of nitrogen, which supports neither animal life nor combustion; one-fifth only consists of oxygen or vital air, without which no animal could live, no fire could burn. The very processes, however, of living and burning convert this oxygen into carbonic acid gas, an enemy both to life and to combustion. We occupy such a room for many hours together, and exert our ingenuity in excluding cold air: windows and doors are *listerd*, sand-bags are placed over the junction of the sash-frames, a thick mat is laid at the bottom of the door, and even the keyhole is closed by a little falling shutter. Under these circumstances the inmates suffer from headache and nervous sensations, but the most obvious source of annoyance to them is that the fire will not burn or that the chimney smokes. The freer the room is from draughts the greater is the evil, for air is the *pabulum vitæ* to the fire as well as to ourselves, and if it is not admitted to have a passage through the room, it comes down the chimney, and brings the smoke with it. In truth we do wrong to leave the supply to chance crevices. Nearly 150 years ago Gauger devised a remedy for the inconvenience, by making a channel under the floor, one end passing through the outer wall of the house and the other opening in the centre of the hearth. Dr. Franklin's method of ascertaining in a rough way how much air is required to be admitted per minute, was to set the door ajar until the fire burnt properly, and gradually close it again until smoke began to appear; he then opened it a little wider, and if the width of the crevice was half an inch in a door 8 feet high, the room would need an aperture equal to 48 square inches, or a hole 6 inches by 8. Six inches square would probably be sufficient for the wants of most chimneys. But where to form this aperture is a difficult question. If made in the door, it admits a cold current to the back and feet of persons sitting near the fire, and also interferes with the privacy of the room: if made in the window, it brings down a cataract of untempered air upon the head. A plan which has come of late into pretty general use, is to have the opening nearly on a level with the top of the

the room at the corner furthest from the chimney-place, and to shield it on the inside with a board sloping upwards. This directs the atmospheric current which enters from without against the ceiling, along which it streams, and coming in contact with the hot ascending air of the apartment, mingles therewith and partakes of its warmth. Dr. Franklin and Count Rumford advocate a similar contrivance, which within the last few years has been made the subject of a patent; but we would venture, with much deference, to differ from these high authorities on the following grounds. It has been wisely ordained in nature that the air issuing from our lungs (which is incapable of supporting respiration or combustion, and acts like a poison if breathed a second time) shall have a temperature of 98° , sufficient to impart to it that elastic ascensional force which would convey it away, did the arrangements of our rooms permit it to be carried off. Dr. Arnott's chimney valve does provide for its escape; but under ordinary circumstances the products of respiration and combustion rise upwards till they are stopped by the ceiling, when they again descend and pass out by the crack at the top of the door, or mingle with the air which rushes towards the fireplace. Thus by a clumsy contrivance, or rather no contrivance, for it was not designed by the house-builder, the foul air is partially got rid of. Now if a sheet of cold air be allowed to spread over the ceiling, it condenses the impure stratum, and causes it to descend with increased rapidity to be breathed over again on its way to the chimney. The effect of such an arrangement is also greatly to lower the temperature of the apartment. We believe, therefore, that the proper plan is to admit the air by a channel from without opening in the hearth in front of the fire; or by a number of small apertures placed behind the skirting, which should be set a little forward for the purpose, each hole being covered with perforated zinc or wire-gauze. By either of these methods a broad sheet of air may be introduced at a low level without occasioning draughts, while due provision should be made at the top of the room for the passage of the vitiated air.

Previous to the time of Count Rumford, it was a common fault to make the mouths of chimneys, and the chimneys themselves, of too large dimensions. The practice appears to have been derived from the model of the fireplace in the old baronial hall or kitchen. In the one case the logs piled up on the hearth, and raised only a few inches above it by the massive andirons, sent, regardless of waste of fuel, more copious floods of heat up the chimney than were radiated into the room, but allowed a large party to assemble before the blaze. In the other case so vast was the cavity, that seats were made in the jambs, and it was almost
literally

literally possible to sit *round* the fire. The plan is still preserved in many of the ancient farm-houses and cottages which remain in the country. As the mantel was raised above the ordinary stature of a man, the apartment was at least well ventilated; but as only a small portion of the air which entered the chimney passed through the fire, it was not always sufficient to maintain an ascending current, and hence these old fireplaces were liable to smoke.

One of the earliest improvers of the system was Louis Savot, who was born about 1579, and became a licentiate in the faculty of medicine at Paris, in 1610. He was early impressed with the maxim of Vitruvius, that it is indispensable in an architect to have some acquaintance with medicine, and he saw no reason why a medical man should not have an acquaintance with architecture. Accordingly he studied architecture in a sanitary point of view, and published in the year 1624 a work entitled '*L'Architecture Française des Bastimens particuliers*,' which seems to have met with much success during the life of the author, and was twice reprinted after his death.

There are many sound principles and ingenious notions to be found in Savot's treatise, which we cannot notice here. They are chiefly applicable to wood-fires, but they have suggested, and may still suggest, hints to persons engaged in fireside improvements, a remark which applies to most of the old works which we have consulted on this subject. We must dwell longer upon the very meritorious fireplace of Gauger, which has been erroneously ascribed to the Cardinal Polignac. A full description of it is given in a work which the inventor published in 1713, entitled '*La Mécanique du Feu*,' and from a translation which appeared in English in 1716, we quote his complacent commentary upon his contrivance:—

'A plate of iron or copper, bowed or bended after such a manner as is not at all disagreeable to the sight; a void behind, divided by certain small iron bands or partition plates, forming several spaces that have a communication one with another; a little vent-hole in the middle of the hearth; a register-plate in the upper part of the funnel; and for some shafts a capital on the top, make up the whole construction and workmanship of our modern chimney. How can there be anything more simple, or plain, or easy to execute? To be able to kindle a fire speedily and make it, if you please, flame continually, whatever wood is burning, without the use of bellows; to give heat to a spacious room, and even to another adjoining, with a little fire; to warm one's self at the same time on all sides, be the weather ever so cold, without scorching; to breathe a pure air always fresh, and to such a degree of warmth as is thought fit; to be never annoyed with smoke in one's apartment,

nor

nor have any moisture therein; to quench by one's self in an instant any fire that may catch in the funnel of the chimney; all these are but a few of the effects and properties of these wonderful machines, notwithstanding their apparent simplicity. Since I used this sort of chimney, I have not been troubled one moment with smoke in a lodging which it rendered untenable as soon as a fire was lighted; I have always inhaled, even during the sharpest seasons, a fresh air like that of the spring. In 1709, water that froze hard everywhere else very near the hearth, did not congeal at night in my chamber, though the fire was put out before midnight; and all that was brought thither in the day soon thawed; neither did I ever perceive the least moisture in winter, nor even during thaws.'

This flattering account of the results of his invention would lead one at first sight to suppose that Gauger had made a sudden bound to perfection, and that nothing further remained to be effected in the improvement of fireplaces. Yet his mention, twice over, of the absence of moisture in his rooms, leads to the suspicion that the unpleasant sensations caused by breathing burnt air, or air which has been in contact with heated metal, was, notwithstanding what he says of its 'freshness,' a defect in his system.

Gauger, nevertheless, was a master of his art. He rightly states that a fire communicates heat to a room by *radiation*, *reflection*, and *conduction*. Radiant heat is reflected according to the same law as light, namely, the angle of incidence is equal to the angle of reflection, and hence it follows that in a fireplace with straight jambs, very few of the rays are reflected into the room. Thus Ff , Fig. 1, being a fire in an ordinary chimney, of which the jambs AB , ba are parallel, the ray of heat fG will be reflected to M ; the ray fH will be reflected back upon itself at f ; the ray fI to N ; and the ray fL to P . This last ray is the only one which can be reflected into the apartment, the others being reflected to the back, or up the chimney, or among the fuel, and contributing in no way to the useful heating effect of the fire. Where the jambs are of plaster the case is still worse, for the rays falling on a dull surface, are absorbed. Having shown how mistaken was the ordinary construction, Gauger proceeds to describe the form of the jambs which would reflect the greatest amount of heat:—

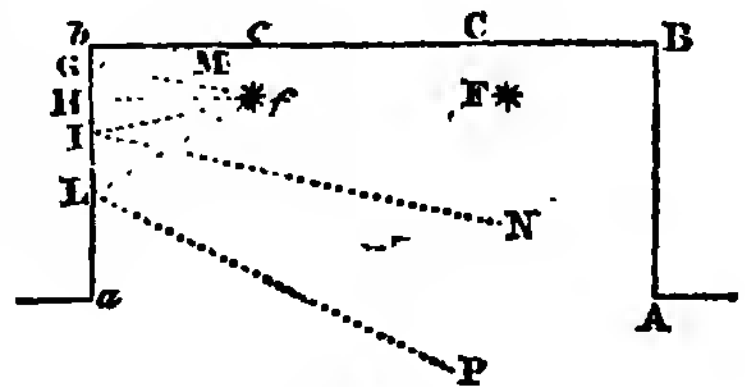


Fig. 1.

'Geometricians are sensible that all radiuses which set out from the focus of a parabola and fall upon its sides, are reflected back parallel to its axis. If, therefore, you take on the bottom of a chimney-hearth,

AB ,

A B, *b a*, Fig. 2, a length *c C*, equal to that of the wood designed to be burnt, for example, of half a log or billet, which at Paris is 22 inches.

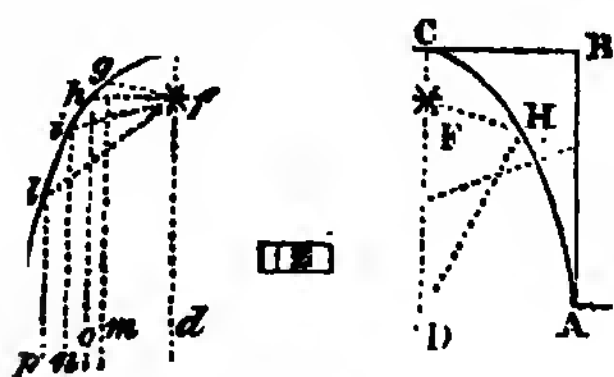


Fig. 2.

from the points *C c*, let fall the perpendicular *CD*, *cd*, which may be the axis of two semiparabolas whereof *C c* are the vertices, and *A a* (the distance between which is the breadth of the chimney) each of them one of their points; that done you are to line with iron or copper plates the two parabolical sides *AC*, *ac*, of the chimney, and make the lower part of the concave parallel to the horizon, and as large as it can be, only leaving ten or twelve inches for the aperture of the chimney funnel. By this arrangement as much of the heat as can be, will be reflected, for all the rays of heat from the focus *F f* of each semi-parabola, as *fg*, *fh*, *fi*, *fl*, &c. will be reflected back parallel to the axis *cd*, in *m*, *n*, *o*, *p*, and consequently pass into the room. So also, all those rays as *EH*, which are not reflected back parallel to the axis, will nevertheless be reflected into the chamber, or nearly so. Besides this, the jambs being so much nearer the fire than is usual, will soon become heated, and reflect a large number of rays.'

Draughts towards the fire were avoided by introducing the outer air by a *soufflet*, or blower, the opening of which was in the centre of the hearth at *Z*. This was furnished with a trap-door, or valve, opening upwards, which could be set at any desired angle, or closed altogether.

This great improvement in the form of the jambs of the fire-place formed but a small part of Gauger's invention. The back, the jambs, the hearth, and the mantel were all made hollow, and

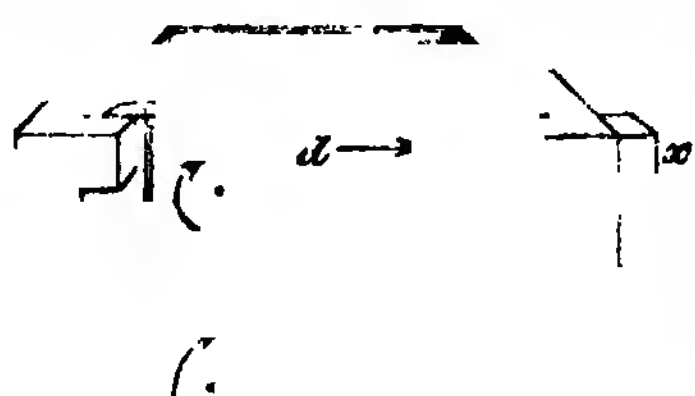


Fig. 3.

were formed by means of perpendicular or horizontal divisions into spaces or *caliducts*, which were supplied with air from without, not by the same channel which supplied the fire, but by a distinct opening shown at *a* in Fig. 3. This figure represents the horizontal arrangement of caliducts, and makes it clear how the air, passing in the direction of the arrows beneath the hearth *e*, and traversing the caliducts at the back of the grate, must have become thoroughly warmed before it passed from the last caliduct *d*, just beneath the smoke-flue *m*, and made its way into the apartment at *x*. The supply of hot air to the apartment was regulated at this point by a valve in the air-channel, formed on the principle of Papin's four-way cock, so that

that warm air could be obtained in greater or less quantity, or it could be shut off altogether and cold air admitted in its stead, or the whole supply of cold air might be excluded both from the caliducts and from the room. Gauger's treatise contains descriptions of a number of complicated fireplaces on this principle, and shows how two rooms may be warmed by one fire, by carrying a pipe from the caliducts through the wall into an adjoining room, or through the ceiling into a room above. For very large public rooms two of these fireplaces may be fixed back to back in the centre of the apartment (in which case there must of course be a descending flue), with one series of caliducts for both.

It must be evident to all persons that Gauger's contrivance is very superior to the majority of fireplaces in use at the present day. The external air is conveyed in sufficient quantity by the air tube, and passing through the caliducts, is raised to a genial temperature; it is thus discharged into the room, and communicates an agreeable warmth to every part, so that it is not necessary for a person in cold weather to warm himself by crouching over the fire, and scorching his face, while his back perhaps is exposed to the chilling influence of chink-winds. As the warm air is constantly streaming in, an equal quantity must at the same time be constantly escaping into other parts of the house, or up the chimney, which secures ventilation as well as warmth. The cutting off of draughts is of greater importance than is generally supposed. Their danger has passed into a proverb in more than one language. 'Shun a current of air from a narrow passage as you would the point of an arrow,' say the Chinese; and the Portuguese have an admonitory couplet to this effect:—

'If cold wind reach you through a hole.
Go make your will, and mind your soul.'

The Gauger fireplace was adapted to the burning of wood fuel. Dr. Desaguliers modified it so as to allow of coal being burnt, and it met with some success in the metropolis. The scientific opponents, however, of the learned doctor selected this useful labour as a vulnerable point, and attacked him on the ground that 'it burnt the air, and that burnt air was fatal to animal life.' In vain did he remonstrate, and give an account of experiments, which, at the present day, would rather tell against his cause than assist it. He passed, for example, atmospheric air over red-hot iron, and collecting it in a receiver, encaged a bird in it which continued for some time to live cheerfully and happily; but on making a similar experiment with air that had passed over red-hot brass, the bird was immediately killed; 'for we know,'
he

he says, 'that brass has in it something stinking and unwholesome when cold, whereas iron is perfectly wholesome.'

The fireplaces having failed, the progress of domestic comfort was retarded by at least a century. Many years afterwards, in his excellent work, entitled 'A Course of Experimental Philosophy,' Desaguliers relates the history of this contrivance, and remarks mournfully:—'As I took so much pains and care, and was at some expense to make this management of air useful, I cannot help complaining of those who endeavoured to defeat me in it.' He was, in fact, altogether an ill-fated philosopher. His ventilating fan was not appreciated by his contemporaries, though in our own day it has rendered such excellent service in the cause of sanitary improvement. He ventilated the House of Commons in 1723, on correct principles, by erecting fireplaces in closets over the ceiling of the house in the upper portion of the building, and leading into their chimney shafts the vitiated air which was drawn off by apertures in the ceiling. But here again he was doomed to be defeated by ignorance and selfishness, for Mrs. Smith, the housekeeper, thinking it a grievance to be disturbed in the possession of *her rooms*, neglected to light the fires at the proper time, and the honourable members of the day pronounced the plan a failure.

In 1745 Dr. Franklin published a pamphlet, in which he described a fireplace suggested by that of Gauger, under the name of the Pennsylvanian stove, which, being contrived with a descending flue, exposed a considerable extent of metallic surface in the room, to be heated by the flame and smoke before they reached the chimney. It was originally adapted for wood fuel, but in 1753 was modified by Mr. Durno for the combustion of coals. The fuel-box was 15 inches wide, 5½ inches deep from the grate to the top bar, and 5½ inches from front to back. It is stated that by means of this fireplace a room 14 feet square was maintained at a temperature of between 60 and 64 degrees during 13 hours, with the combustion of only one peck of coals, and this at a time when the external temperature was 28 degrees. Like the predecessors to which it owed its origin, it does not appear to have obtained favour in England, any more than other contrivances on the same principle, which, from time to time, were patented, and then allowed to go out of use. Indeed architects erect houses and construct fireplaces in a way which renders it extremely expensive, as well as troublesome, to adopt improvements. When the building is finished, and the grates on the common construction are all *in situ*, it requires more than ordinary means and courage to tear them out, and set in their places scientific contrivances of which no one perhaps can give any practical account.

account. Even if an ironmonger were supplied with working drawings of a fireplace with caliducts, he would have to send to Wolverhampton, or some other 'casting' district; the manufacturers would be well nigh as much puzzled as himself, and if they succeeded at last in producing in iron the mysterious apparatus, the cost would be excessive. Unless builders and ironmongers are parties to these improvements, improvements are all but hopeless. It would seem to be a very simple operation to convey from the outer wall of a house an air tube, to open in a soufflet in the hearth, but if any one attempts this simple operation, he will probably find that the tube of 4 inches square cannot be placed under the floor without cutting the joists to such an extent as to render them insecure; that the driving the aperture through the side-wall of the chimney, which projects into the room, will be expensive, if not unsafe, that the grate must be taken out, the hearthstone taken up, and domestic comfort be disturbed for an indefinite length of time by bricklayers, masons, and ironmongers. Even those who write most learnedly on the subject are fellow-sufferers with those who hope to get information from the learning. We have been present in a room, lighted with gas, and warmed by a common fire, where a number of distinguished chemists, seated at a table, were arranging in council the affairs of a philosophical society. Any one of these gentlemen could have given a most satisfactory lecture on the folly and danger of breathing impure air; and yet from the force of habit, and from a feeling perhaps that the remedy was out of their own hands, they submitted to hold their consultations in an atmosphere unfit for animal respiration.

The most successful of all the modern attempts to improve grates and economise fuel was that of Count Rumford, at the close of the last century. His labours were more generally received than those of his predecessors, and the Rumford stove soon became and still continues a favourite. When he began his reform of domestic fireplaces, the common construction (in spite of all that had been advanced by Gauger and others) was to make the back of the fireplace as wide as the opening in front, with the sides perpendicular to it, and parallel to each other. The space above the fire was also of large dimensions, and there was a metal plate or cover in use, which sloped upwards towards the *back* of the chimney, and tended to draw up the warm air instead of reflecting the heat into the apartment. •

In order to increase the warming effect of the fire, Count Rumford brought the grate forward, that the rays of heat which had formerly struck against its perpendicular jambs might be available in the room. It thus became necessary to build up a new
back

back to the grate, which now stood detached from the original chimney-back, and this gave him an opportunity of effecting his second great improvement, which was to diminish the throat of the chimney to the smallest possible size that would suffice for the transmission of the smoke. An abstract of the Count's description will explain the arrangement:—In a room of medium size, suppose the thickness of the wall of the chimney in front, as measured from the front of the mantel to the breast, be 9 inches; set off 4 inches for the width of the throat, and supposing the back of the chimney to be built upright, as it should be, this will give 13 inches for the depth of the fireplace as measured upon the hearth. In such a case 13 inches will be a good size for the width of the back, and three times 13 inches, or 39 inches for the width of the opening of the fireplace in front, so that the angle made by the back of the fireplace and the sides or covings equal 135° . In shaping the throat of the chimney, the ends of the new walls are to form a flat horizontal surface, which renders it more difficult for wind to force its way through the narrow passage than if the sides were sloped outwards, or made to swell out at the upper extremity of the throat into a trumpet-shape, till it increased by degrees to the size of the canal of the chimney. Circular or curved forms for the covings are objected to as being productive of eddies in the current of air which flows towards the fire. That portion of the current which passes under the mantel should be made gradually to bend its course upwards, so as to unite with the smoke, instead of crossing upon and embarrassing it in its ascent, and the desired end is attained by rounding off the breast of the chimney, which before his time was frequently left flat and full of holes and corners.

To the other beneficial changes was added the diminution of the size of the grate by filling up the back and sides with pieces of firestone, till the width of the cavity was reduced to six or eight inches. Under the old construction the Count calculated that 14-15ths of the heat escaped up the chimney and was lost.* Any attempt to maintain a small fire was ineffectual, on account of the great mass of metal of the grate, and the air rushing into it, cooling down the fire below the point necessary for combustion, as a live coal which falls upon the hearth soon ceases to be red-hot from the cooling effect of the surrounding atmosphere and the cold material on which it falls.

* Dr. Arnott estimates the loss at seven-eighths, of which one half is lost in the smoke as it issues from the burning mass; two-eighths are carried off by the current of the warmed air of the room, which is constantly entering the chimney between the fire and the mantelpiece, and mixing with the smoke; and the rest is lost from about an eighth of the combustibles passing away, as soot or unburned fuel.

Such

Such is a brief statement of Count Rumford's important additions to domestic comfort, derived from his verbose Essay, which possesses the charm which is communicated by earnestness of purpose. He is constantly returning to points which have been already demonstrated; and, lest there should be any mistake, after giving, at the end of his Essay, 'Directions for laying out the work,' he has a second supplement consisting of wood-engravings with separate descriptions. He also names many of the nobility and gentry who have adopted his plans with success, and gives references to the workpeople who executed them. With the honest pride of an inventor, he refers to at least five hundred smoky chimneys which he has conquered, and says, 'I have never been obliged, except in one single instance, to have recourse to any other method of cure than merely reducing the fireplace and the throat of the chimney to a proper form and just dimensions.' He remarks that the alterations involve very little expense, requiring only a few bricks and some mortar, or a few pieces of firestone; that they are adapted to any kind of grate or stove, and that they have effected a saving of fuel equal to one-half, and frequently two-thirds, of the quantity previously consumed. He requests the public, tradesmen, and manufacturers to observe that as he had no intention of patenting any inventions of his which might be of public utility, all persons were at full liberty to imitate them, and vend them for their own emolument; 'and those who wish for further information will receive *gratis* the information they require by applying to the author, who will take pleasure in giving them every assistance in his power.'

The opening for the passage of the smoke in the plan of Count Rumford, was, as we have seen, only four inches wide, and he had a clumsy contrivance for removing a portion of the masonry to permit the chimney to be swept. This defect was remedied about the year 1806 by the introduction of stoves with a plate of iron, not sloping upwards towards the *back* of the chimney, as had previously been the case, but inclining upwards in the contrary direction towards the mantel, and being supplied with a trap-door for the smoke. These plates or registers have continued in use ever since; they are convenient and easy of removal, but are less favourable to economy of fuel than masonry, because of the greater conductivity of metal.

The register is really a very old contrivance, and appears in some cases to have been synonymous with the damper. In the furnaces of the alchemists, openings left for the supply of air, and which could be contracted or entirely closed by means of clay, were called registers. Thus we find in Ben Jonson:—

Look well to the register,
And let your heat still lessen by degrees.

The first mention that we have met with of the register-plate occurs in Savot, who, on the authority of Scamozzi, says that it was customary in England when a brazier full of fuel was well lighted, and had ceased to smoke, to shut the iron door, and confine the heat to the room.

Dr. Franklin, writing in 1785, puts in a claim to the invention of the modern 'registers,' or 'sliding plates, which have since been brought into use under various names, with some immaterial changes,' but which he states to have been contrived by himself in 1758, and described in a letter to J. Bowdoin. In this letter he speaks of the method as designed for keeping rooms warmer in cold weather, and with less fire, than usual.

'The opening of the chimney is contracted by brickwork, faced with marble slabs to about two feet between the joints, and the breast is brought down to within about three feet of the hearth; an iron frame is placed just under the breast, and extending quite to the back of the chimney, so that a plate of the same metal may slide horizontally backwards and forwards in the grooves on each side of the frame. This plate is just so large as to fill the whole space, and shut the chimney entirely when thrust quite in, which is convenient when there is no fire. Drawing it out so as to leave a space between its further edge and the back, of about two inches, this space is sufficient for the smoke to pass, and so large a part of the funnel being stopped by the rest of the plate, the passage of warm air out of the room up the chimney is obstructed and retarded, and by that means much cold air is prevented from coming in through crevices to supply its place.'—*Franklin's Works by Sparks*, vi. 534.

Dr. Franklin notices as an instance of 'the tractability of smoke,' a fireplace which he saw at an inn in Staffordshire.

'The opening of the chimney is bricked up even with the fore-edge of its jambs, leaving open only a passage over the grate of the same width, and perhaps eight inches high. The grate, with the coals it contains, is wholly without the wall that shuts up the chimney; yet the smoke bends and enters the passage above it, the draught being strong, because no air can enter that is not obliged to pass near or through the fire, so that all that the funnel is filled with is much heated, and of course much rarefied.'—*Franklin's Works*, vi. 531.

We have seen many such fire-places put up as a cure for smoky chimneys, but they burn with a roaring draught that causes a great consumption of coals.

Admirable in many respects as were the remedies we have been describing, they did not, we fear, touch certain cases of smoky chimneys which torment the housekeeper to the present day.

day. For example, the canal or funnel of the chimney may be too high, compared with the size of the fire, when the hot air will cool down before it reaches the top and loses all its ascensive force. In other words, the column of air within the chimney being nearly of the same weight as an equal column on the outside of the chimney, there will be little or no motion up the shaft, and the smoke will fall back into the room. It more frequently happens, however, that the funnel is too short, as with attics, when, if the shaft cannot be lengthened, the remedy is to contract the opening of the fireplace, and thus compel all the air which enters to pass through or very near the fire. The chimney of an upper is sometimes turned into the flue of a lower room, which is one of the most effectual methods for producing smoky chimneys that could possibly be devised. If a fire is kindled in the upper room when there is none below, the smoke has to encounter the reservoir of cold air in the main shaft. Its ascensive force being thus destroyed, not only may the upper room be filled with smoke, but it is also apt to creep down the principal flue, and invade the apartment beneath. On the contrary, if the lower fire only be kindled, the cold air from above rushing in at the upper part of the flue will cool it down at that point, and, as in the former case, may cause the smoke to descend into both the rooms. The remedy for these inconveniences is either the objectionable one of closing the upper fireplace with a well-fitting fire-board, or the inconvenient one of keeping up a fire in both apartments, when the joint effect will increase the force of the draught in the main shaft.

The principal remedy for smoky chimneys being to keep up an ample supply of air, and no special provision being made by the housebuilder for the purpose, the air finds its way through the cracks of windows and doors, or by the more easy passage of another chimney-shaft. In this way chimneys may often overpower each other. A fire in a front or back drawing room may burn very well by itself, but if an attempt be made to light both fires the rooms are filled with smoke. The stronger burning fire draws upon the shaft of the weaker for a supply of air, and of course brings the smoke down with it. If the two rooms be separated by a wall, the same effect may be produced, for they still communicate atmospherically by the joints of the doors. It is even possible, when the windows fit tightly, for a large kitchen fire to overpower all the other chimneys of the house. Dr. Franklin tells us that this happened in a nobleman's new-built mansion in Westminster, and after the owner had paid for it, he had to expend three hundred pounds to cure the defect.

The existence of these up and down draughts, as well as the
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necessity for a constant supply of air to promote combustion, may be illustrated by a pleasing experiment:—

‘Place a lighted taper in a flat dish, and cover it with a glass receiver, furnished with a long glass chimney placed immediately over the flame. If the bottom of the receiver does not come into very close contact with the dish, enough air will enter to support combustion, and the draught or current of hot air will escape up the chimney, and the taper will continue to burn for any length of time. If we now shift the receiver a little on one side, so that the flame may not be immediately under the chimney, the products of combustion will impinge upon the glass, and cooling down and mingling with the air of the receiver, will contaminate it so much, that the taper immediately begins to burn dimly, and will soon be extinguished. On bringing the chimney over the flame, it will speedily improve in appearance; the smoke and other products of combustion will be rapidly discharged, and the receiver will become bright and transparent as before. But suppose we cut off all communication with the external air from below by pouring a little water into the dish, so as to cover the mouth of the receiver, we shall then have the case of a room which is provided with a vent tube near the ceiling, but has no provision for admitting fresh air from any lower

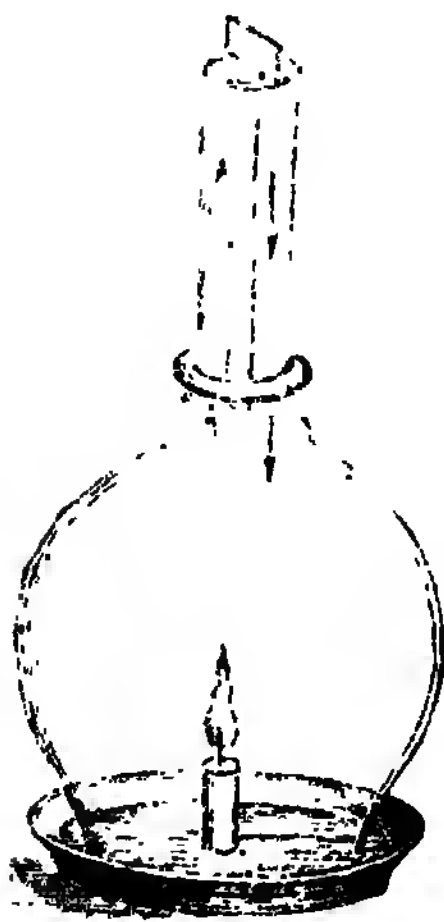


Fig. 4.

openings: in such case, the fresh air will seek to enter by the ventilating tube. If this be large enough, the outgoing hot air and the incoming cool air will divide the tube into two parts. But if, as in the experiment before us, the ventilating tube or chimney be too narrow, the hot and cold currents will interfere with each other; the tendency of the hot air to rise and of the cold air to descend, will prevent the escape of the one and the entrance of the other, and the taper will soon be extinguished for want of fresh air. But if the chimney be divided into two portions by a flat strip of tin plate passed down it, as in Fig. 4, and the taper be lighted and placed in its former position, it will continue to burn for any length of time; for, by this arrangement, the two currents of hot and cold air are prevented from interfering

with each other; the hot air will pass up one channel and escape, and the cold air will descend the other channel to feed the flame. By holding a piece of smoking paper or the glowing wick of a taper on one side of the chimney, the smoke will be drawn down, thereby indicating the descending current of cool air; while, on the other side, the smoke will be driven up by the ascending current of heated air.’—*Tomlinson*, pp. 164, 165.

Chimneys may also smoke from local position, as when their tops are commanded by higher buildings or by a hill, so that the wind in blowing over them falls like water over a dam, and
passing

passing over the tops of the chimneys, may beat down the smoke. If it is not possible to raise the funnels to the same height or higher than the eminence, the usual remedy is to place on the top of the chimney one of those uncouth forms, which render the sky-line of London houses so hideous to behold. The simplest contrivance is a revolving cowl, furnished with a wind-arrow, which causes the mouth, whichever way the wind blows, to be turned in an opposite direction. Such expedients, however, may fail in the case of reflected winds, as when an eminence is farther from the wind than the chimney commanded, in which case the wind would be pent up between the house and the eminence, and force its way down the chimney in spite of the turncap. Dr. Franklin mentions a city in which smoky chimneys were numerous in consequence of the kitchens being lower than the houses, with which they were connected by a passage. When the wind blew against the backs of the houses, the whole side of a street formed a kind of dam, and the obstructed currents were forced down the kitchen chimneys. The annoyance was greatest when the kitchen fires were burning badly, because the draught was then insufficient to carry the smoke to any considerable height.

As the full enjoyment of the open fire depends so much on a knowledge of the peculiarities of the fickle race of chimneys, we will specify a few more cases, to enable any afflicted reader to ascertain for himself the cause and cure of the evil, without having recourse to the uncertain and expensive prescriptions of the chimney-doctor. It may happen that a chimney, which would otherwise draw well, will smoke from the improper position of a door; for example, if the door and the chimney are on the same side of the room, and the door opens against the wall, a current of air will rush across the fire-place and check the draught which is flowing into it, when the smoke must descend. This is more likely to happen in shutting than in opening the door, for the force of the current is then increased. The best remedy is to shift the hinges of the door and direct the air along the other wall; but a projecting screen is sometimes sufficient to intercept the offending current.*

Rooms which are not often warmed by a fire, may be filled with smoke from the chimneys of other rooms where fires are burning. This is either caused by the wind or by changes in the density of the air of the cold funnel, due to the varying temperatures of day and night. If the temperature of the outer atmosphere and of that in the chimneys is nearly the same, a current of warmer air from the room begins to ascend the shaft in the evening and continues till nine or ten o'clock next morning: as
the

the heat of the day advances, the current sets downwards. When, therefore, the smoke from the neighbouring chimneys passes over the tops of those which are drawing downwards, it is sucked in with the current, and fills the room below, or gives that strong smell of soot which is familiar to every one. The inconvenience, however, since the use of the register stove, has been less felt than formerly. Chimneys, again, placed in the north wall of a house do not always^d draw so well as those on the south, because, being cooled by the north winds, there is not always sufficient ascensive force. The flues which are enclosed in the body of the house are protected from the chilling effects of the external air, and are thus more powerful than those in outer walls; while those which are built in stacks often draw better than separate funnels, since they lend heat to one another.

The form of the chimney-pots is of some importance. Those which are ornamented are often objectionable, the projecting portions serving as points of resistance to the wind, and reflecting it down the chimney. When the pots are grouped or clustered together they present a broad opposing surface to the blast, which, being checked by the obstruction, may rise up along it, and, blowing strongly over the mouths of the funnels, prevent the smoke from passing up through it.

Lastly, chimneys may smoke from causes which science may not be able to reach. In one case, mentioned by Dr. Franklin, a flue on which all remedies had been tried in vain was found, on taking down the wainscot, to have a crack several feet in length and some inches in width. In another case the same intelligent observer began to treat his patient with all the confidence of science:—

‘ I opened the door, and perceived it was not want of air ; I made a temporary contraction of the opening of the chimney, and found it was not its being too large that caused the smoke to issue : I went and looked up at the top of the chimney ; its funnel was joined in the same stack with others, some of them shorter, that drew very well, and I saw nothing to prevent its doing the same : in fine, after every other examination I could think of, I was obliged to own the insufficiency of my skill. But my friend, who made no pretension to this kind of knowledge, afterwards discovered the cause himself. He got to the top of the funnel by a ladder, and looking down, found it filled with twigs and straw, cemented with earth and lined with feathers. It seems the house, after being built, had stood empty some years before he occupied it, and he concluded that some large birds had taken advantage of its retired situation to make their nests there. The rubbish, considerable in quantity, being removed, and the funnel cleared, the chimney drew well and gave satisfaction.’

Some years ago a favourite method of warming an apartment
was

was by means of the *stove-grate* or *chapelle*, the latter name being given from its resemblance to the chapels or oratories of cathedrals. It was set within the opening of the large square fireplace, but kept distinct from it. The sides and back of the grate were of cast-iron, and were continued down to the hearth, inclosing the ash-pit. The pipe or flue was carried up some feet into the chimney, and was hidden by the Gothic ornaments of the grate. A register, or damper-plate, was so contrived that when open the smoke might strike it obliquely and be directed with certainty into the vent without any risk of reverberating into the room. All the rest of the space above the fire was shut up by iron plates or brick-work. The fuel being in immediate contact with the back and sides of the grate, raised them to a great heat, which they communicated to the air contiguous to them; and as there was but little outlet for it above, it became diffused over the room. The effect was remarkable. Less than a quarter of the fuel consumed in an ordinary fireplace was sufficient, and there was the same cheerful blazing hearth, and salutary renewal of the air. The difficulty, indeed, was so to regulate the temperature as to prevent the room from becoming oppressively warm. Those parts of the apparatus which were in contact with the fuel became needlessly hot, and it was found an improvement to line them with thick plates of cast-iron, or with tiles of fire-clay, which, being bad conductors, moderated the heat communicated to the surrounding atmosphere. Passages were also opened in the vent, to permit the air heated by the sides of the stove-grate to ascend directly into the flue, instead of escaping into the room. It had the further recommendation that a cheerful fire was insured within five minutes, by hanging a plate of iron in front, which reached down as low as the grate, and was removed as soon as the fuel had burnt bright.

Among the newly-introduced stoves of the present day, the greater number are remarkable for brilliant reflecting surfaces. In Jobson's stove-grate, which was patented in 1848, and attracted considerable attention, the fire is surrounded by a circular parabolic reflector, which reflects the rays of light and heat into the room in parallel lines. The reflector turns upon a hinge at the side, and can be brought out like a door, for the purpose of cleaning the grate or lighting the fire. There is a concealed ash-pan, which requires to be emptied only once a week. As the parabolic casting surrounds the grate, there is little or no passage for the air into the chimney, except through or close over the fire; but when it is required to ventilate the room, the reflector can be drawn forward an inch or two to allow

allow the air to flow in around it. This fireplace has a handsome appearance.

The Gauger principle of air-tubes and caliducts has hitherto scarcely had a fair trial. Mr. Francis Lloyd has ingeniously and successfully applied the principle to an ordinary grate, by bringing in the outer air, allowing it to circulate in tubes at the sides and back of the grate, and then discharging it into the room at the upper part of the mantel. A meritorious attempt has also been made in what is called 'Pierce's pyro-pneumatic warming and ventilating stove' to secure the advantages of the caliduct system without producing the 'burnt air' which was fatal to the success of the plan as introduced by Desaguliers. As yet this stove has been chiefly applied to the warming of public buildings or halls, where the effects of an over-dry atmosphere would be less evident: but there is much reason to suppose that the inventor's plan of placing the tubes or caliducts within masses of fire-loam, and thus avoiding all contact of the heated air with the metal, will obviate the evil. Like the Châpelle, this pyro-pneumatic stove stands within the fireplace. The air from the caliducts, which is distributed over the apartment, in conjunction with the direct heat of the open fire, produces, it is said, a pleasant temperature, with very little fuel. It is stated in the manufacturer's circular that the largest-sized stove of this description sends out twenty thousand feet of warm air within the hour, at an expenditure of four pounds weight of coal; and that half a hundred weight of coals may be taken as the consumption for the day.

A fashion has lately been introduced of placing the fire-grates lower than formerly; in some cases on the very hearth, under the idea that a low fire burns better, or gives out more heat from the same quantity of fuel, and communicates greater warmth to the feet. Dr. Arnott has shown the fallacy of this idea in a paper communicated to the 'Journal of the Society of Arts,' 14th July, 1854. After referring to the laws of radiant heat, and showing that in the common open fireplace it is from the radiant heat that almost all the warmth is derived; and that the rays do not raise the temperature of the air until they have been first intercepted and absorbed by the walls and furniture of the room, he proceeds as follows:—

' 1st. The supposition that fuel burnt in a low fire gives out more heat has arisen from the experimenter finding that his hand held over the low fire feels not only the heat radiated from the fire itself, but also that reflected from the hearth close beneath it, which second portion, if the grate were high, would have room to spread or radiate downwards and outwards to the more distant floor or carpet, and to warm them.

' 2nd.

'2nd. The notion that the fire, because near the floor, must warm the carpet more, springs from what may be called an error in the logic of the reasoner, who is assuming that the hearth, floor, and carpet, being parts of the same level, are in the same predicament—the truth being, however, that in such a case the hearth within the fender gets nearly all the downward rays, and the carpet almost none—as a candle held before a looking-glass at a moderate distance diffuses its heat pretty uniformly over the whole, but if moved close to one part of the glass it overheats, and probably cracks, that part, leaving the rest unaffected. A low fire on a heated hearth is to the general floor or carpet of a room nearly what the sun, at the moment of rising or setting, is to the surface of a field. The rays are nearly all shooting upwards from the surface, and the few which approach it slant obliquely along, or nearly parallel to, the surface, without touching, and therefore without warming it.

'The annexed diagram serves to elucidate these facts.

'*c* represents the fireplace or centre of radiation, with rays diverging from it into the free space around.

'*a c* the wall in which the grate is set, and which can receive none of the direct rays,—as is nearly true of the floor also, if the fire be on the hearth.

'*a b* the ceiling.

'*b d* the wall opposite to the fire.

'*c d* the floor, with the fire on or close to the hearth. If there were no floor at all, these rays would shoot as abundantly down to the bottom and walls of the room below, as

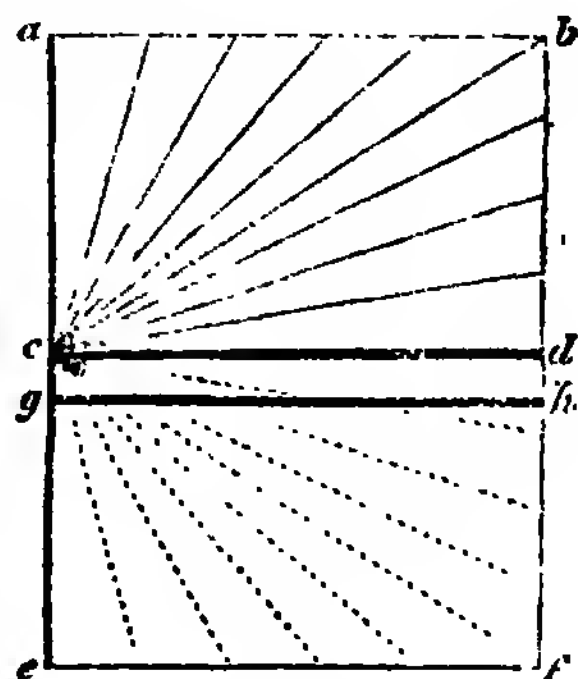


FIG. 5.

to the ceiling and walls of the room above; but the hearthstone of the floor, *c d*, first intercepts all the inferior rays, and then radiates them up to the ceiling, leaving the floor unsupplied, unless by secondary radiation from the ceiling and walls.

'*g h* represents a floor at a moderate distance below the fire. It is seen, by where the ray-lines intersect this floor, that much of the heat of the fire must spread over it, and chiefly between the middle of the room and the grate where the rug is, and where the feet of the persons forming the fireside circle are placed.

'Striking proof of the facts here set forth is obtained by laying thermometers on the floors of a room with a low fire, and of a room with the fire, as usual of old, at a height of about 15 or 16 inches above the hearth. An experiment, tried in two such rooms, in both of which thermometers on the pianofortes, four feet above the floor, stood at 62°, showed the carpet, not far from the hearth, to be at 56° with the low, and at 73° with the high fire.'

'The open fire-place,' says Mr. Tomlinson, 'is so intimately connected with an Englishman's ideas of domestic comfort, that it can never be expected, while coals are plentiful, that a more economical method

method of warming our rooms will become very common. It is, therefore, the duty of scientific men to make the open fire-place as comfortable as it certainly is wholesome, and if a better method of supplying air to the fire than the present chance arrangement were adopted; if caliducts were led round the fire, so as to discharge warm air into distant parts of the room, and even over the house; if the various parts of the fire-place were of the proper shape and dimensions; there seems to be no good reason against retaining our cherished open fire, and converting it from a troublesome, uncertain, smoky, and expensive companion, into a source of health, pleasure, and economy.'—p. 95. The details into which we have entered will show how far these desiderata have been secured; but something more still remained to be done, and this has been accomplished by Dr. Arnott. The three great requisites in the open fire-place are,—first, the consumption of smoke; secondly, economy of fuel; and thirdly, the production of a proper temperature, together with effectual ventilation. None of the contrivances already described pretend to prevent the formation of smoke, or to consume it when formed. Some have effected considerable economy of fuel, and do, to a certain extent, promote ventilation; but all three objects are alone compassed by means of Dr. Arnott's last admirable invention. The subject of stoves does not come within the scope of this article, or we should have something to say upon the Arnott stove, which, when introduced fourteen years ago, was received with enthusiasm, and generally adopted; though through defects in the manufacture, want of skill in the setting, and carelessness in the management, it subsequently lost a part of its popularity. Yet, with a moderate degree of attention, it will perform all the duties which its inventor claimed for it, such as maintaining day and night, throughout the winter, from October to May, a temperature of sixty degrees or upwards, by an expenditure of 12 lbs. of coal for 24 hours, or about one-fourth the quantity required for the maintenance of an open fire for fifteen or sixteen hours. Dr. Arnott, finding that the sympathies of Englishmen were opposed to the introduction of a close stove into rooms, next directed his talents to the improvement of the open fireplace. His first resolve was to make the fire consume its own smoke, and it occurred to him that, if instead of putting the coals on the top of the fire, where the bituminous matter, exposed to the heat below, evaporates as visible smoke, the fresh coals were introduced from *below*, the vapour of pitch and other gaseous products rising up through the burning mass would be consumed, and thus the products of combustion, instead of those of distillation, would pass into the chimney. But as there has never lived

lived a more lucid exponent of science than Dr. Arnott, we cannot do better than allow him to speak for himself:—

‘Common coal is known to consist of carbon and bitumen or pitch, of which pitch again the elements are still chiefly carbon and hydrogen, a substance which, when separate, exists as an air or gas. When the coal is heated to about 600° Fahrenheit, the bitumen or pitch evaporates as a thick, visible smoke, which, when it afterwards cools, assumes the form of soot. If that pitch, however, or pitchy vapour, be heated still more, as it is in the red-hot iron retorts of a gas work, or in rising through a certain thickness of ignited coal in an ordinary fire, it is in great part resolved into invisible carburetted hydrogen gas, such as we burn in street lamps. Now when fresh coal is thrown upon the top of a common fire, part of it is soon heated to 600°, and the bitumen of it evaporates as the visible smoke, which immediately rises. Of such matter the great cloud over London consists. If the pitchy vapour be heated to ignition by the contact of a flame or of ignited coal near the surface, it suddenly becomes in great part gas, and itself burns as flame. This is the phenomenon seen in the flickering and burning which takes place on the top of a common fire. But if fresh coal, instead of being placed on the top of a fire, where it unavoidably must emit visible pitchy vapour or smoke, be introduced beneath the burning, red-hot coal, so that its pitch, in rising as vapour, must pass among the parts of the burning mass, it will be partly resolved into the inflammable coal gas, and will itself burn and inflame whatever else it touches. Persons often amuse themselves by pushing a piece of fresh coal into the centre of the fire in this way, and then observing the blaze of the newly-formed gas.’

Dr. Arnott found that a patent for a plan somewhat similar to his own had been taken out by Mr. John Cutler (January, 1815); but his patent-right was contested with success, and as the apparatus was expensive, complicated, and liable to get out of order, it was soon abandoned. In Dr. Arnott’s improved scheme, in the description of which we freely borrow from the account which has been published by the inventor, the charge of coal required for the day’s consumption is placed in the fire-box *e, f, g, h*, fig. 6, and the coal is raised upwards, as it is wanted, by means of a piston which forms the bottom of the box, the piston being worked by the poker as a lever. The piston-rod is furnished with notches, in which the point of the poker is inserted, and a ratchet-catch supports the piston when the poker is withdrawn. The coal-box may be seven, or eight inches in depth, and will contain from twenty to thirty pounds of coal, according to its area. In winter the coal may be heaped an inch or two above the mouth of the box, and in mild weather the charge may be diminished by not allowing the piston to descend to the bottom. If the charge of coal should be consumed, and
it

it be required to refill the box without allowing the fire to go out, a broad flat shovel, of the shape of the bottom of the grate,

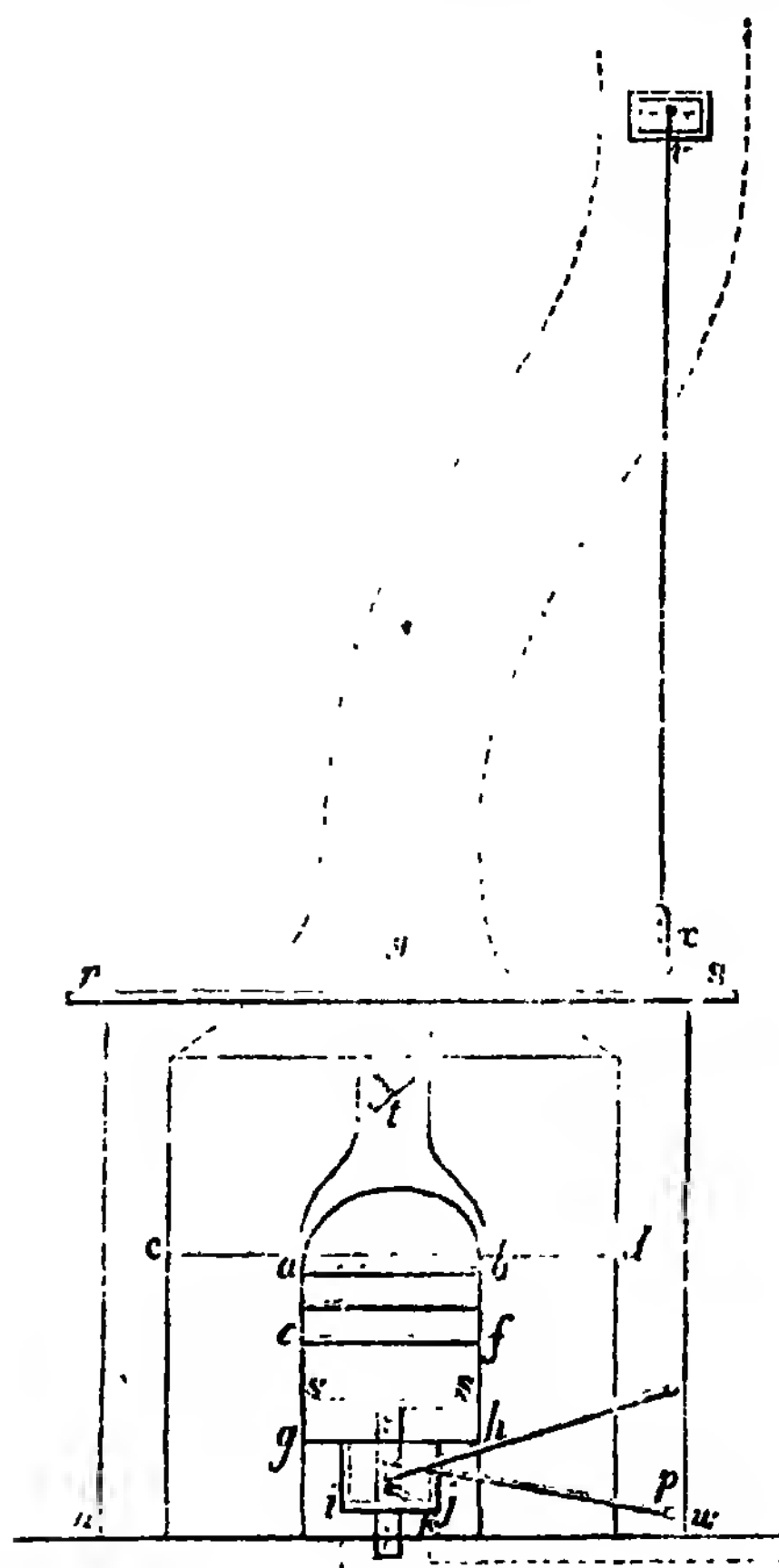


Fig. 6.

is pushed in upon the piston, the flat surface of which will now be flush with the bottom bar of the grate, *e, f*. The burning coals being thus supported, the piston is let down to the bottom of the box, for the reception of the new charge of coal. This being shot in, the spade is withdrawn. The fire can be lighted easily and quickly: the paper and wood are laid on the top of the coal, with a layer of cinders to the thickness of three or four inches. While the wood is burning and igniting the cinder, the heat raises from the coal below a pitchy vapour which increases the blaze; a little smoke now ascends into the chimney, but as soon as the cinders are fairly ignited the vapour becomes converted into gas, and the smoke ceases. It is not the least merit of this contrivance,

contrivance, that as no soot is deposited, the chimney will not require sweeping.

It is essential to the success of this contrivance that the piston fit the coal-box pretty accurately, so that no air be allowed to enter at the bottom; the combustion is thus confined to that part of the fire which is exposed to view, namely, between the bars of the grate and near the top of the coal-box. When nearly all the coal which is surrounded by the bars has been consumed, the air will dive into the box and keep up a gentle combustion, until the remainder of the fuel is burnt up. The fire may thus be kept in for a whole day or a night without requiring to be stirred, and yet in a moment, on raising the piston, a good blaze will burst forth. If a more active combustion is desired, it can be immediately produced by letting in an increased quantity of air, for which purpose there is a slide in a small door in front of the lower part of the coal-box. The fire may be extinguished by taking out the few lumps of caked coal which remain in the fire-box, or it may be left to exhaust itself. A defective construction of the piston, or an accidental injury to the ratchet, may be the source of occasional failures in the action of this apparatus.

The saving of fuel is effected by a peculiar contrivance. We have already seen that a large proportion of the matter which passes up the chimney-shaft does not consist alone of the products of combustion, for these are diluted with the air which is constantly streaming towards the fire. Now it is evident that if the smoke were discharged into the chimney without making the ordinary demand upon the warmed air of the room, we should have the benefit of its heat for a longer time. To effect this Dr. Arnott placed over the fire a cover or hood *y a b*, so arranged as to prevent more air mixing with the smoke than was required for the combustion of the inflammable gases. The saving he found was from one-third to half of the fuel previously required to maintain the desired temperature. In a room 15 feet by 13½ feet by 12 feet, with two large windows, the coal required to maintain a temperature of 55 degrees in the coldest winter day was 18 lbs. for nineteen hours. Dr. Arnott remarks, that ‘under the present imperfect forms of open fire, the whole of the hot smoke passes away as certainly as here; but that at present it is so much diluted with the colder air of the room, that ordinary observers do not perceive, and consequently do not regret, the fact.’

The saving of fuel might be increased by making the smoke do duty before it is finally dismissed into the chimney. If, for example, it were brought into contact with a vessel containing

taining water or colder air, it would give up a considerable portion of its heat; thus the hood itself may be made a boiler or water vessel. In some cases the contraction of the space over the fire may be better made in brickwork than in metal, or the metal may be lined with tile to prevent the 'burnt-air' smell. The bottom of the chimney should be closed by a plate or other means, that no air may enter except through the hood. Through this plate the stalk of the hood passes tightly at *y*, and the stalk is furnished with a throttle-valve or damper at *t*, for regulating the supply of air. The handle which moves the damper is accompanied by a plate or card, graduated to show the position of the valve. When the valve is quite open the chimney quickens the combustion, like that of a blast furnace; but by closing the valve, the fierceness of the fire is diminished. The chimney-flue above the upper opening of the hood should be furnished with slanting sides, so as not to harbour dust or soot; for if the fire be carelessly used, soot may, of course, be formed.

It may now be asked what becomes of the ventilation of the room, if the air does not rush into the fireplace, as under ordinary circumstances? To this we answer that an Arnott valve, placed in the chimney close to the ceiling, is necessary in every room which is occupied by human beings, in order to prevent the air, poisoned by the process of respiration and by the combustion of lamps and candles, from being breathed over again. The action of the hood fortunately renders the Arnott valve, which was before uncertain in its operation, invariably effectual; for since the hood restores to the chimney its proper function of carrying off only the highly heated products of combustion, the hot ascending column improves the draught of the chimney, and the comparatively colder air near the ceiling of the room forces open the ventilating valve. Such a valve is shown at *v* in the figure; it is balanced nearly on its centre of gravity, that the least pressure of air from the room may open it inwards, while any pressure from within the chimney occasioned by a down draught closes it up. Attached to the valve is a wire, furnished at the bottom near the mantel *r s* with a screw or loop-peg *x*, to allow of its being partially or wholly closed. Beneath the hearth is a channel, shown by dotted lines, for conveying fresh air from the outside of the house: it enters the room under the fender by which it is warmed before it diffuses itself through the room—a means of economising heat as ingenious as it is original. This air-duct is also furnished with a regulating valve.

The small quantity of air which passes into the chimney in a fire-place thus constructed greatly diminishes the cold draughts from

from doors and windows. As there is no soot the chimney cannot possibly catch fire; and even if it could, it would be extinguished by closing the hood-valve. Smoky chimneys are effectually prevented. The danger from light muslin dresses igniting by being blown towards the grate on the opening of the door, is entirely cut off; for there can be no rush of air when the fire is well supplied from the duct below the fender. Neither is there any risk of sparks from exploding pieces of coal, since all the coal is coked in the coal-box before it is raised to view. The strong draught of a large kitchen or other fire cannot overpower this chimney; which may, on the contrary, by means of a connecting tube, be made to ventilate a distant room, staircase, cellar, or closet. It is another advantage of its improved draught that fires can be maintained without inconvenience in upper rooms, as well as in low houses and cottages. When the fire is stirred, the hood-valve, by being opened more widely, will occasion such an increased current as to carry off dust, while the chimney-valve will allow a room, without overheating, to be lighted with gas, and will prevent explosions from its escape by not allowing it to accumulate. Any kind of coal, coke, culm, or coal-dust may be used, for the fumes which render some sorts objectionable in ordinary grates are carried off by the powerful action of the hood. It should, however, be stated that the brightness produced is rather that of coke than of coal, and that although it is easy to excite rapid combustion, yet the flame is pale and different in character from that of the ordinary fire.

It is certainly an advantage of these arrangements that they can be applied to a common grate in an ordinary fire-place. It was asserted by one of the speakers in the course of the discussion at the Society of Arts, after the reading of Dr. Arnott's paper, that 'he believed that the old grates might be adapted to Dr. Arnott's principle by an outlay of 25s. or 30s.; and grates, for very common purposes, might be so adapted at even a smaller cost.' As this statement has been very widely circulated, and is calculated to injure the plan which it was, doubtless, intended to promote, we think it right to mention that the cost will be much more considerable. Two manufacturers offer to supply grates on the new construction—one for 4*l.* 10s., the other for 5*l.* A third in his circular offers them for 2*l.* 10s.; but when we last inquired he was not yet provided with any at this price. When the new grate is bought, the *fixing* is likely to be costly: in some cases the hearthstone has to be cut through or pulled out to allow the piston-rod to work, and the air-duct, &c., may lead to considerable outlay. It is necessary, therefore, to have an estimate of the whole expense before the alterations are commenced;
but

but we can safely affirm that when once the householder has passed through the ordeal of floors and hearthstones disturbed, and grates reset, he will be amply repaid in the improved state of domestic comfort, health, and cheerfulness. And it must be added, that many of the difficulties and expenses accompanying the introduction of new forms of apparatus diminish as the arrangements become familiar to workpeople. Already it has been found that the cost of the Arnott fireplace has lessened with the increasing knowledge of his plan. Its extensive introduction during the present winter into both public offices and private dwellings, and the bestowal of the Rumford Medal on the inventor by the Royal Society, are the best proofs that he has not laboured in vain.

ART. VII.—1. *Report from the Select Committee on the Friendly Societies' Bill; together with the Minutes of Evidence, &c.* House of Commons, July, 1854.

2. *An Act to consolidate and amend the Laws, and to grant Additional Facilities in relation to the Purchase of Government Annuities, &c.: to which is added, Tables of the Rates of Government Annuities.* Printed by Authority of the National Debt Commissioners, 1853.

3. *Copies of further Report and Tables prepared under the direction of the Lords of the Treasury, by the Actuary of the National Debt Office, on the subject of Sickness and Mortality among the Members of Friendly Societies, as shown by the Quinquennial Returns to the 31st day of December, 1850.* Presented to the House of Commons, August 11, 1854.

OF all the instinctive principles of human nature which are found to develop themselves with activity in civilized society, there is perhaps none at once more powerful, universal, and beneficial, than that which suggests the provision of resources against the wants of the future. The bee and the ant afford typical examples of this instinct among the lower order of animals, and in its simplest form. In the case of man it assumes the additional shape of a propensity to lay by, or *save*, not with a view to the preservation of life only, but likewise to the command of an abundance of the means of enjoyment. In one or other of these shapes it is the source of all that accumulated stock of wealth which distinguishes civilised from savage life, and constitutes the essential element of material prosperity in a people.

The universality of this saving spirit, and the extent to which it is sure to develope itself under favourable circumstances, have not,

not, we think, been sufficiently adverted to by the investigators of social science, or more attention would have been paid to arrangements likely to bring about so generally beneficial a result. No doubt it has always been recognised that security must be afforded to the possession and freedom in the disposal of wealth, as conditions necessary to its rapid accumulation. But the legislation of civilized countries has limited itself usually to this amount of encouragement to the provident or saving propensity by which property is created and accumulated. It is only of late years that any attempts have been made (tentatively and experimentally, as it were) to afford direct facilities for its exercise. The success, however, of these experiments, so far as they have gone, has been such as to justify the most sanguine expectations from their extension. For this end it is, of course, upon the masses, or, in the phrase of the day, the million, that influence must be brought to bear. The higher, or wealthier and more educated classes, may be left to themselves to find out the best modes of employing their savings with a view either to security or to increase. But the multitude whose days are passed in severe labour, which leaves them little time or opportunity for investigating the comparative safety or advantage of investments — whose savings, moreover, can only be individually minute, almost infinitesimal, although possibly immense in the aggregate — stand obviously in need of encouragement, advice, and assistance in this important matter. Indeed the strength and universal prevalence of the saving principle among even the poorest classes, with respect to which no doubt can be entertained, can with difficulty come into operation without such assistance. Where is a labouring man to bestow the few pence he might by frugality economise from the modest wages of his daily toil, after providing for his immediate wants? He may hoard them, it is true, in an old glove or stocking, or in the Irishman's treasury, a hole in the thatch of his cottage. But even if safe in such hiding-places, they gain no increase there, none of the *profit*, which he sees the wealthier classes obtain in the various investments open to them. No wonder, then, that the desire of immediate gratification so often prevails over the propensity to save, and the money is spent in the ale-house and gin-shop, or perhaps in worse haunts, instead of being laid by as a resource against future need, or employed productively as *capital* with a view to profit, to his own advantage as well as of those whom its expenditure in that form would employ.

It was to meet this want that, upon the model of some private societies of a local and benevolent character, the system of *Savings Banks* (to which we shall hereafter more fully advert) was insti-

tuted by the Legislature in the years 1817-18. Previous to this, however, it had to some partial extent been supplied by those remarkable spontaneous associations of the working classes which go by the name of Benefit Clubs, or Friendly Societies, the members of which contribute certain weekly or monthly payments to a common fund from which a proportionate allowance is promised to them, in case by sickness or accident they are rendered for a time incapable of labour, as also usually a sum of money to defray funeral expenses on death. Occasionally some other advantages are guaranteed in addition to the above. These societies have, it is believed, all sprung into existence within a recent period: very few having been heard of before the present century, although some of their features may be discovered in the guilds of the Anglo-Saxons and the fraternities or unions in which many of the 'trades' have from time immemorial been linked. By far the greater number of benefit societies are local, and partake of the character of convivial clubs, each being set on foot by some publican at whose house the members, usually from twenty to perhaps a hundred in number, periodically meet and spend a portion of their money, the landlord acting as treasurer, and keeping the box in which the contributions are deposited, and from which the allowances to sick members, or sums payable on death, are taken by officers appointed for this purpose. A committee is generally chosen to manage the affairs of the society and settle disputes; and rules, more or less copied by one society from another, are drawn up, by which every member on his entrance agrees to be bound. Many, however, of these societies are linked together by a sort of affiliation under a common name, such as the Manchester Unity, the Order of Odd Fellows, the Ancient Order of Foresters, the Rechabites, the Druids, the Shepherds; running sometimes into still stranger extravagances of nomenclature, as—the Female Druids, the Oddesses, Old Friends, Peaceful Doves, Sons of Zebedee, &c. But in these cases the local clubs are still in fact separate societies as respects the essential matter of funds, that is to say, of contributions and liabilities; although styled lodges, branches, or districts of the general association, and subscribing to its rules.

There are no statistics by which the total number of the different Friendly Societies, or of their members, can be accurately ascertained. But there can be no doubt of the vast extension of the system. The Manchester Unity boasts of having near 300,000 members in the ranks of its affiliated branches, which extend over all Britain, and even into the colonies. The Ancient Order of Foresters, and that of Odd Fellows, each comprise from 80,000 to 100,000 members. Lord Beaumont,
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in speaking on the subject in the House of Lords in 1852, computed the total number of members of all the societies at 3,052,000; the amount of their annual contributions, or revenue, at 4,980,000*l.*; and their accumulated capital at 11,360,000*l.*

The spirit and intention of these popular self-formed institutions, which have grown up to such enormous magnitude within a comparatively recent period, are excellent so far as their main object goes, namely, to supply the insufficiency of individual effort in mitigating the calamities of sickness or death by aid from associated friends. They combine with the principle of a merely selfish forethought, the higher one, in a moral sense, of fraternal union and assistance in misfortune among neighbours as well as the more scientific principle of mutual assurance. But they have serious drawbacks in the too convivial character of their meetings, in the place of assemblage—being almost always a publichouse—in the frequent inadequacy of their funds to meet the demands on them, owing to the imperfect data on which the contributions are calculated, and in the want of security for their property, to which, by what can only be considered a technical omission, the law has hitherto afforded no protection, except upon conditions unpalatable to the great bulk of these societies. Strange to say, the larger proportion of the immense sums mentioned above as their accumulated funds, are still, or till within a very recent date have been, wholly at the mercy of the several treasurers, who might at any time make away with them (as has happened in several instances) without responsibility, since the law does not recognise unincorporated societies as having any *status* at all in its courts, and individual members are incapacitated from suing the defaulting treasurer by having renounced all individual ownership of their money on putting it into the common box.

The Legislature has, it is true, made several attempts to place these societies on a better footing, but not with any great success. The first Act passed for this purpose was the 33rd George III., c. 54 (1793). It was followed by several amending Acts up to the year 1829, when all were repealed by the 10th George IV., c. 56, which has been the ruling statute up to the passing of the recent Act, 13th and 14th Victoria, c. 115. The main feature in all the legislation on this subject has been the permission given to friendly societies to 'sue and be-sued'—that is, to possess a legal status, and hold property, and likewise to invest their funds with the National Debt Commissioners, on their being enrolled by an officer specially appointed for the purpose by Government under the title of Registrar of Friendly Societies, the condition of such enrolment being that the rules and tables should

should be certified by an actuary (in the early Acts by two justices of the peace) to be such as might be safely adopted upon a scientific calculation of the probabilities of life and health among the members. This condition, however, the great bulk of the benefit clubs have been always unwilling or unable to accept. The proportion of enrolled to unenrolled societies has never been correctly ascertained; for of the latter no public record exists. But it was calculated recently, by competent authority, that these comprehended at least two-thirds of the whole number of members. Such was the state of things up to 1850, when, by the 13th and 14th Victoria, c. 115, friendly societies were for the first time admitted to 'Registration' without submitting their tables for an actuary's certificate, and the result has been to bring into enrolment no less than 5000 (societies and branches) since the passing of that Act. The certificate of an actuary is now only required in case the society guarantees annuities in old age to its members; and so great is the unwillingness to encounter this ordeal, that only 39 out of the 5000 societies have submitted to it, the rest giving up this class of assurances in order to avoid the test.*

Nothing could more clearly show the insecure data on which the tables of the great bulk of these societies are framed than this striking fact. It is true that actuaries themselves are more or less 'at sea' upon the subject of reliable data for calculating the tables of contributions in such societies. The science of 'vital statistics' is a new one, and as yet imperfect. The average value of life has been ascertained from the statistics of mortality with some approach to accuracy as regards particular localities. But it varies with the locality. It varies also with the trade or occupation of the parties. The liability to sickness, which is the chief element to be considered in calculating the tables of friendly societies, varies probably still more according to these and other circumstances, and has as yet been far less closely investigated. The experience of friendly societies themselves affords the best data for this inquiry; and of this Mr. Neison largely availed himself in his valuable work entitled 'Contributions to Vital Statistics,' which was published in 1845. More recently the Government have printed the Report of Mr. Alexander Finlaison on a still wider amount of evidence contained in the tabular returns of the enrolled friendly societies, which are required to be made quinquennially by the Act 9th and 10th Victoria, c. 27.

These materials, though still deficient if precise accuracy were really requisite (which is, however, not the case), establish

* Report.—Evidence of Mr. Tidd Pratt, Q. 157.

and the element of disaffection to which the former fact gives rise becomes neutralised by the latter. This is a hopeful view of human society, and it only requires a fairly contented mind, and one ready to take things at their true value, to realise it to its full extent. No one has more reason to be satisfied with his social position and his sphere of action than the English parson. He has a recognised status. His class is made for him. He has no higher platform ever dancing before his eyes, upon which, if he could only make good his standing, he thinks his happiness would be complete. It is no derogation to him that his wife does not go to London and is not presented at Court. George Herbert's rule for the country parson's wife's practice may be extended beyond domestic medicine. 'For salves, his wife seeks not the city, but prefers her garden and fields, before all outlandish gums.' He has not a thousand doubts where he shall settle, and what sized house he shall venture on, for the sake of his family. His own particular home and income are made for him, and the extent of each being known, he is never expected to live above his means.

'The pastor,' says George Herbert, 'is the deputy of Christ for the redeeming of men to the obedience of God.' 'The faithful minister,' adds old Fuller, 'endeavours to get the general love and goodwill of his parish. This he does, not so much to make a benefit of them, as a benefit for them, that his ministry may be more efficient; otherwise he may preach his heart out before he preacheth anything into theirs.' And in these days more than ever, when the authority of the Church as the living oracle of God's truth has become so faint, its influence will be maintained more by the lives and character of its ministers than by their office. It has always in a measure been so, but much more so now. The really earnest and zealous pastor gains ground in time, wherever he is and whatever his doctrinal views may be. But this influence, from its very nature, cannot be the work of a day, of a lucky accident, of a brilliant talent; it is the work of grace, and so of growth, of steady consistent perseverance, of the single eye and heart, of a judgment that discerns between the sin and the sinner, of an interest shown in many things which are not strictly within the priest's office, of going about doing good. Nor, though mixing with his people in temporal as well as spiritual things, need he secularise either his employment or enjoyments. The State may gain, but the Church loses, by clerical magistrates; and even in the midland counties the sporting parson is disappearing, or in disrepute.

How greatly the wife and household help or mar parochial work, though coming fairly within our subject, is beyond our present

liability to sickness would lead to a refined and complicated classification which must make the scheme impracticable. The labouring classes would not comprehend, and consequently would not adopt it. A rude approximative equity is alone attainable in this matter; and if in a fraternal association of the kind one member gets somewhat more and another somewhat less than the exact value of his stake, it is only what is unavoidable in all human societies, and is scarcely a matter of regret, especially since the moral element of mutual aid—the ‘bearing of one another’s burdens’—enters avowedly into the principle of every friendly society.

The advantage derived by the industrious classes from these self-constituted associations, has naturally led to much interest being taken in them by benevolent persons anxious to promote and assist every effort of these classes to support themselves in independence. And many friendly societies of an improved character have been set on foot under such patronage with more or less of success—some on a large scale, even extending over entire counties, and numbering their members by thousands. In these, of course, the meetings at public houses have been eschewed; and the tables of contributions submitted for the approval of actuaries. There has frequently been, however, we must think, in these cases an attempt at doing too much, an endeavour to make the society provide assurances against too large a catalogue of contingencies. Not only have allowances been assured in sickness and sums on death, but also annuities in old age, endowments to children on attaining a certain age, apprentice fees, widowhood pensions, emigration money, and even the provision of small capitals for setting up in trade, &c. We believe this to be a mistake, though a very natural one. We agree entirely in the opinion, which his long experience in the working of friendly societies has led Mr. Tidd Pratt, the official Registrar, to adopt, that they should confine themselves wholly to the assurance of allowances in sickness, and the payment of a sum on death sufficient to meet the expense of a funeral.* And, moreover, that they should be confined to this by the law—leaving the purchase of deferred annuities, *i.e.*, old age pensions, to be made from the Government, which (under a recent Act to be mentioned presently) it is now open to every one to obtain with the greatest facility.

The ground on which we think this limitation desirable, is the insecurity and uncertain duration of even the best-constituted society of this kind—*à fortiori* of the generality of them. Ex-

See his evidence before Select Committee of 1851, Q. 172.

perience has proved that the greater number last but a few years, coming to an end through insolvency, or the desertion of members, or some other cause affecting their stability. Is it right then for them to take money from poor and ignorant men, on the promise of paying them annuities or other assured benefits to fall due at *distant* periods, perhaps twenty, thirty, or forty years after the date of the engagement? How many a poor man has continued for years at great sacrifice making his monthly payments to such a society, in reliance on these guaranteed 'benefits,' and found it bankrupt before the time arrived for the fulfilment of its engagements to him!

According to Mr. Neison, the first authority on the subject, the great bulk of the friendly societies are actually insolvent, and *must* fail sooner or later to fulfil their contracts. The evidence of Mr. Tidd Pratt and* Mr. Arthur Scratchley, given before the Committee of last year as the result of their very wide experience, is to the same effect.* Probably not one of the societies now in existence will be so fifty years hence. If there were no other mode of extending to the poorer classes the means of providing themselves with a certain pension in old age, without the degradation of coming upon the parish, the savings' bank would offer a far better medium than societies of such questionable security. But deferred annuities, or pensions to commence at any age, can now be contracted for with the Government, with the inestimable advantage of complete security. It is therefore the height of imprudence in a poor man to enter into such a contract with any friendly society whatever. We are strongly of opinion that no such society should be any longer permitted with the sanction of the law to deal in assurances against remote prospective contingencies of this kind.

On this ground, indeed, we are prepared to go somewhat farther in the way of prohibition than Mr. Tidd Pratt seems as yet to consider advisable. A friendly society which calculates its tables on the principle of taking from the younger members a rate of contribution sufficient to ensure them the benefit of sick pay up to an advanced period of life or to its close, enters into contracts against contingencies as remote (and therefore as unlikely to be fulfilled) as when it sells old age annuities. In such tables the contributions required from the young members, say between 15 and 35, are calculated, of course, not merely to meet their probable sickness during the early years of their membership, but a portion of it is intended to accumulate at compound interest in some investment, to provide against the increasing

* Q. 172, 1793.

sickness of their later years, that is to say, of a remote period, 30, or 40, or 50 years in advance. Should then the society break up within that time, such members as have paid during, say, the first half of their lives twice as large a contribution as would have covered their probable liability to sickness for that time, on the promise of the continuance of the contract on the same terms for the latter half, are defrauded in the same way, if not quite to the same extent, as if they had been paying during the same time for deferred old age annuities.

In our view the legislature should not stamp with its sanction, by admitting them to registration, any societies established on a plan, and holding out expectations, which according to all past experience must prove delusive. Such a principle is by no means necessary to the popularity or general advantage of a benefit society. The contributions may as readily be calculated (as they are in many flourishing societies) on the principle of each member paying only according to his probable chance of sickness *for the time being*, that is to say, within the current year, or other limited period.

If friendly societies confined themselves to this offer of the guarantee, avowedly temporary, of fixed allowances in sickness, and small sums on death for the purpose of funeral expenses, in return for monthly contributions, it will be evident on a little consideration, that no real harm could arise from any moderate error in the estimates of sickness and mortality, on which these contributions are calculated, not even though actual insolvency resulted at any time from this or any other cause. Each member, in fact, pays during his membership for the benefit of the assurance during that time, and no longer. If he fall sick in the course of it, he receives the sick pay to which he is entitled. If he do not incur sickness, he yet enjoys for the whole of the period, whether long or short, through which he pays, all that he bargained for—the assurance, namely, of support in sickness if he requires it. Supposing him to have paid for ten years and received nothing, not having had a day's sickness during that time, he is nevertheless not injured by the dissolution of the society. He has had his pennyworth for his penny—all that he contracted for. And the same argument holds equally good of the contract for funeral expenses if he die within that time.

If, on the contrary, he had commenced paying when young and healthy, *at a rate of contribution calculated on the principle of insuring him throughout life*, or up to a very advanced age, and that the club fails just as he gets old and infirmity is coming on him, he is clearly defrauded. But this is owing to the false assurance given him of the permanence of the society,

society, and the calculation of its tables on that expectation, and on this ground it is that we deprecate the formation of societies on such a plan. All ought to be, in truth, considered as essentially of a temporary character. It is a mere delusion for them to pretend to absolute permanence, and regulate their tables on the supposition of perpetual solvency. The only safe course (which is pursued by many of the best societies, and ought, we think, to be made compulsory on all) is to profess no more than they can be sure to perform, and therefore to offer a temporary guarantee only,—say, from year to year, or even merely from month to month—which is, in fact, the true nature of the assurance which alone it is in their power to afford. There is nothing to bind the individual members of any society to continue their monthly payments a day longer than they choose. How then can they (with honesty) in their collective capacity pretend to enter into permanent contracts? Societies constituted avowedly on a temporary principle, should, as has been said, graduate the contributions of their members so as to correspond, as closely as may be found convenient, with their respective ages. But the report of Mr. Finlaison shows that no very complex tables are requisite for this purpose. One uniform contribution (for the same rate of sick pay) may be taken (with sufficient approach to equity to satisfy all reasonable persons) from members of all ages between 15 and 35. From those between 35 and 45 one-third, and* from those between 45 and 55 two-thirds, *more* may properly be required; and from members between 55 and 60 an additional three-fourths.* No member should be permitted to remain on the books after that period. He should then fall back for support upon the old age pension, which, it is to be hoped, he will have long before purchased *of the Government*, through the agency of the secretary to his society or the savings-bank. A society of this simple form may be really permanent, for the very reason that it enters only

* We do not put forward this graduated scale of contributions as anything more than approximative. The following Table from Mr. Finlaison's analysis of the average amount of sickness experienced by the general mass of contributors to Friendly Societies will enable any one to frame a scale of contributions according to age, more or less simple as may be preferred:—

From the age of—

16 to 21	the average number of days' sickness per annum is . .	6½
21 to 26	„ „ „ „	6½
26 to 36	„ „ „ „	nearly 7
36 to 41	„ „ „ „	7
41 to 46	„ „ „ „	8
46 to 51	„ „ „ „	10
51 to 56	„ „ „ „	12
56 to 61	„ „ „ „	16
61 to 66	„ „ „ „	22

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into temporary engagements, and that its income will always about balance its expenditure. If it be objected to this recommendation that the oldest members will have to pay the largest contributions just at the period when their earnings are likely to fall off, and consequently their means of payment, the reply is, —that their liability to sickness being thereby increased, it is only just and right that they should pay more for an allowance in case of its occurring. They are not thereby deprived of the benefits derived from the principle of mutual assurance; that principle does not require that the young members should pay for the support of the old, nor that a member should pay in youth for his own maintenance in old age. It might be desirable to establish societies on that principle, if it could be done with *complete security* for the fulfilment of such remote engagements. But as experience has shown that it is not in the power of friendly societies to afford such security, it is far better that they should confine themselves to that which is wholly within their power, namely, the mutual assurance to their members of allowances in sickness, and a sum for funeral expenses in case of death, for the current year or month, in return for annual or monthly contributions, reasonably proportioned to the average liability of the members (classed in three or four simple groups) to the occurrence of sickness or death during that limited period.

No doubt it is necessary to have a certain fund in hand at all times to meet the demands of the current period, and for this end it is usual to require a proportionate entrance-fee (from three to six months' pay) from each member, or (what comes to the same thing) to allow him no claim to the benefits assured until his contributions amount to that sum. It is possible that at times a considerable *surplus* fund may be found to have accumulated in the treasury of such a society, owing to either an unusually healthy season, or to the contributions having been set at too high a rate. If there is good reason to believe the latter cause to have been at work, a division of the surplus among the members, in the shape of a bonus, is a very usual and by no means unwise mode of disposing of it. The prudent among them will transfer their shares immediately to the savings-bank, or purchase an old age pension of Government to the amount it will command. If, on the other hand, the surplus appears fairly attributable to the former cause, a wise committee will recommend the members to leave it in the treasury, as a provision against the occurrence of a proportionately unhealthy season and a consequent amount of sickness beyond the average in the following year. It is also possible that, owing to some such unusual occurrence, or to miscalculation, the fund may, on some occasion, prove

prove deficient before the year expires; if so, no great mischief will follow—certainly no injustice to any one. The members then on the sick-list will be disappointed, but the evil will be small. They will have paid what at the time was believed to be sufficient to insure them for (say) twelve months, and it has turned out only enough to insure them for (say) eleven months. Had the contributions been fixed at a higher rate, that is to say, if *they had paid more*, they would not have been disappointed of the twelfth month's sick pay. But, as they did not pay for it, so neither are they defrauded by not receiving it. For the future the society will, if wise, either keep a larger balance in hand, by enlarging their entrance-fee or increasing their rates of contribution. Such a temporary suspension as is here supposed partakes in a very slight degree of the injustice, and carries with it none of the bad consequences, of the failure of those societies which pretend to permanence, and contract for assurances, often of high value and heavily paid for, to fall due at a remote period, before which they have become insolvent.

If we are right in our belief that friendly societies should limit themselves to the very simple form and character we have indicated, it would seem further desirable that the same plain rules and tables might be judiciously adopted by all; and these might with advantage be suggested for general use by a circular from the Registrar. At present every separate society of 50 or 100 members, consisting in many cases only of uneducated labourers and artisans, has to devise its own rules and rates of contribution, without any other guide perhaps than the wisdom of the landlord of the house where they assemble, aided by a chance copy of those adopted by a neighbouring parish, or in the larger affiliated societies. It seems evident that the rules which are best for one society must be best for all, and the extended knowledge of the Registrar would probably be able to suggest the preferable form.* The tables of contributions and sick-pay might be recommended to vary according to the locality, at least so far as to distinguish between rural and town populations.● Were this done, and the rules and tables circulated by some central and experienced authority like the Registrar, adopted, as we believe they would be voluntarily by the great bulk of the friendly societies throughout the country, we think the system would be placed on the best attainable footing, and that further interference would be unwise. Aided by this amount of advice and instruction from the highest quarter, and influenced probably more or less by the persuasions of their friends among the upper classes, the good sense and prudence of the members themselves will probably be found before long to free them from the temptations

tations of the publican and the public-house, by holding their meetings at some place less likely to counteract the frugal and prudential object of their association: some reading-room or public institution, or at the residence of their secretary or steward. If they desire to hold an annual meeting, and walk in procession, and even to dine together on the occasion (for what public business is ever in this country got through without a dinner?), there is no necessary evil in such an arrangement. On the contrary, good-fellowship and mutual acquaintance are very fitting elements in such a society, which, as has been said before, is not a mere pecuniary investment, but partakes in some degree of a social, benevolent, and fraternal character. The very names which common usage indifferently applies to it, of a *Friendly Society*, or *Benefit Club*, show how generally this idea of *friendly association* is entertained in the minds of its originators; and we have no doubt that the annual feast brings in many members who would not otherwise belong to it. If honorary members are admitted to contribute, they should avoid any attempt to interfere in the management, which had best be left wholly in the hands of the benefit members, or of the officers they may elect for the purpose. Gratuitous contributions from wealthier neighbours will be in themselves desirable, both as a mark of sympathy in the praiseworthy endeavours of self-support which such societies exhibit, and as an encouragement to their formation and permanence. But there should be no dictation of arrangement, still less a parade of assistance bearing the aspect of charitable donations. The feeling of independence and self-support, which has hitherto caused the establishment of so many societies of the kind among the poorer portion of the industrious classes, should be carefully guarded from any taint of the kind, which would infallibly suggest the notion that the society is countenanced only because it keeps the members from applying to the parish—an idea certain to diminish its general popularity, and check its extension and consequent utility.

One word upon the fitting number of members, in which respect there is a remarkable inequality among existing societies. It is obvious that it should be sufficient to allow of the sickness and mortality among them approximating to an average, which cannot be reasonably expected in a small club of a dozen or twenty members only. On the other hand, much danger arises from too great an extension of number, especially if the area over which they are spread is also large. The safe working of these societies entirely depends on a strong individual interest being felt by every member in the economy of the common fund. It is not enough to rely on medical certificates of the inability
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to work of a member who claims sick pay, nor on the sharp-sightedness of stewards. Unless his neighbours have a sufficient interest in detecting imposition, it will undoubtedly be attempted, and in many cases with success. That sufficient interest can only be found in a society composed of limited numbers, in which each feels that it is *his* money that is paid away—'*sua res agitur*'—and that, unless imposition is prevented, the fund may be exhausted perhaps just as he becomes a claimant on it. Experience has proved this position incontestably. We could give instances of large societies, counting their members by thousands, and spread over entire counties, in which, upon examination, the amount of sickness (for which allowances have been claimed and paid) has for many years together exceeded, in a very large proportion, the true average as ascertained from the bulk of the smaller societies, and which are consequently insolvent! So far from there being sufficient interest in individual members to induce them to watch and check imposition, the very opposite feeling may, under such circumstances, prevail—a desire to appropriate as large a share as possible of the county stock (the magnitude of which suggests also a false estimate of its inexhaustible character) to themselves and their neighbours.

It is not easy to say what number will be best with the view to escape these opposite evils. A crowded neighbourhood, such as a town, by facilitating superintendence, evidently admits of a larger number than would be safe in a thinly peopled district. A range of from 50 to 200, according to local circumstances, may be reasonably considered safest.

It is desirable that, together with the allowance of money in sickness, medical attendance should be also afforded by the society, the cost of which will of course be reckoned in the calculation of the contributions. Practitioners are very ready to contract with societies for this purpose at a moderate charge per member. This arrangement, with a rule that no member shall belong to more than one friendly society at the same time, and also that the allowance in sickness shall not exceed two-thirds of a member's wages when at work, will tend to prevent imposition.

Sufficient security by bond should be taken from the treasurer. And if the money in his hands at any time exceed what is necessary for current expenses, the surplus should be invested in a savings' bank or in Government securities. Money intended for the support of the sick or burial of the dead is too sacred a fund to be risked in speculative investments.

Deferred Annuities.—We have recommended that friendly societies should not undertake to guarantee pensions in old age.
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And, indeed, it appears, as has been said, that out of 5000 societies which have lately come under registration, all but 39 have renounced this branch of assurances. It would, however, be lamentable if such a provision were not to be placed within the reach of the industrious classes, or that the members of friendly societies, on reaching an age at which it would be imprudent or impossible for any society to keep them on their list, should be left destitute of other support than parish pay or the workhouse. Happily an Act was passed in the Session of 1853, under which the purchase of a Deferred Government annuity is facilitated to such a degree as to enable every man or woman in the kingdom, with the smallest assistance from an intelligent friend, or the clergyman of the parish, or through the medium of the secretary of a friendly society, or of a savings' bank, to obtain it. The history of this valuable enactment, which is as yet, we believe, not generally known or appreciated, may be briefly told. So long ago as the year 1773, on the recommendation of the late Baron Mazères, well known for his publications on annuities, a Bill for a similar purpose passed the House of Commons, but was lost in the Lords. In 1833, Lord Althorp, as Chancellor of the Exchequer, we believe, on the suggestion of Mr. Woodrow, introduced, and obtained the sanction of the legislature to an Act admitting of the purchase of life annuities, both immediate and deferred, from the Government, through the medium of any savings' bank, and on so small a scale as to place them within reach of the humblest members of the working classes. That Act, however, so far as regards deferred annuities, has been very nearly a dead letter. It appears from the recent return to Parliament, the title of which we have placed at the head of this article, that in the twenty years since its enactment only 2034 persons have purchased deferred annuities, to the amount of 40,474*l.*, or an average of about 20*l.* each. The cause of this small result we believe to have been the terms on which the annuities were calculated; namely, that the purchaser should in all cases have the option of claiming the return of his payments at any time previous to the commencement of the annuity (but without interest), or his executors if he died before that time. It is evident that in the tables framed upon this principle the account of every purchaser must be kept separate from the rest, and the deferred annuity so contracted for, years before it is wanted, cannot be more, but is in reality less, in amount than that which might be purchased as an *immediate* annuity, when wanted, by the same sum or sums of money paid into a savings' bank, and allowed to accumulate there till the annuity is required. There has been therefore no inducement for preferring the purchase

chase of a deferred annuity in this form to that of an immediate annuity when the time should arrive that it is needed, but the contrary; and we are not surprised at the very small number of persons who have availed themselves of the offer; while of immediate annuities there have been in the same time upwards of 8000 purchasers, the amount reaching to 161,640*l.* per annum, an average likewise of about 20*l.* Even this, however, is a very insignificant result; and we should have but slender expectations of any large benefit from the offer of Government annuities, if the terms proposed continued as in the Act of 1833 (3 and 4 Will. IV., c. 14). But in the session of 1853 another Act was passed to consolidate and amend the preceding Acts, by introducing various improvements, and especially one clause, from which we are inclined to augur great and most beneficial consequences. This Act continues the power given to the Commissioners of the National Debt by the former statute to grant, to any amount not exceeding 30*l.* per annum, *immediate* annuities on single or on joint lives; and also *deferred* annuities on single lives, the purchase money to be either paid down in one sum at the time of contract or by annual instalments, and in both cases *to be returnable* if required at any time by the party (but without interest) as in the old Act. But it further empowers them to grant *deferred* life annuities for a sum to be paid down at once, and *not returnable*. The Table prescribing the purchase-money of this last class of deferred annuities is, of course, calculated on the same principle of *mutual assurance* on which the friendly societies proceed. Any one purchasing such an annuity (in other words, an old age pension to commence at a future period, if *he lives so long*) takes the chance of his not living to receive it, just as every member of a benefit society or sick club takes the chance of his not being sick, and therefore never needing the allowance in sickness for which he pays. The money once paid is not returnable in either case. But then the benefit, if needed, is proportionately large, each member's own contributions being swelled by those of the other associated members, who do not fall sick, or, in the case of the old age pension, do not live to the term at which it is to commence. The superior benefit of this class of deferred annuities is seen at once by a comparison of the purchase-money of the same amount of annuity under the two systems—that in which the payments are returnable, and that in which they are not.

It must be remarked that by the new Act the tables are greatly simplified, and the whole scheme made far more manageable by confining the amount of annuity purchasable to sums of one pound or some multiple of a pound (not exceeding 30*l.* in the whole),

whole), by which all fractions of a pound are confined to one side of the account. It appears then from the tables published by the Commissioners under the Act that a deferred annuity of one pound per annum to commence at the age of 60 will cost, if purchased by a male of the age of 15, on the principle of the return of the money (Table II.), 2*l.* 10*s.* 1*d.*; on the principle of no return (*i. e.* of mutual assurance), (Table III.), only 1*l.* 5*s.*, or less than half; if the purchaser of the same annuity be 20 years of age, the respective sums will be 2*l.* 18*s.* 9*d.* in the first case and 1*l.* 10*s.* 8*d.* in the latter. If 30 years old, 4*l.* 0*s.* 11*d.* and 2*l.* 8*s.* 4*d.*; if 40, 8*l.* 14*s.* 6*d.* and 6*l.* 13*s.* 8*d.* If the annuity contracted for is to commence at the age of 65, the purchase money on the mutual principle (Table III.) will be for every pound, when the purchaser is 15 years of age, only 15*s.* 1*d.* as against 1*l.* 16*s.* upon the separate principle (Table II.); if 20, only 18*s.* 6*d.* as against 2*l.* 2*s.* 2*d.*; if 30, 2*l.* 7*s.* 4*d.* in lieu of 3*l.* 18*s.* 9*d.*; if 40, 2*l.* 5*s.* 8*d.* in lieu of 4*l.*

But it is not alone from their comparative cheapness, as costing but one-half, or little more than half, that we recommend the purchase of Deferred Annuities under Table III. in preference to those under Table II. The former have the additional advantage, in our eyes inestimable, of being *inalienable*. The latter are but too likely to be given up under the pressure of circumstances before old age arrives and the annuity commences. If contracted for on the principle of money down, a change of mind, or the desire to lend the money perhaps to a friend, or spend it in some indulgence or rash speculation, or any other of the various forms of temptation which, in the course of a lifetime, are sure to beset a poor man with the command of a sum of money, will very probably induce him to ask for the return of his payments and renounce his claim to the annuity he had contracted for. If purchased on the principle of annual payments, there will be added to these motives for withdrawal the still stronger one of occasional difficulty in keeping up the payments. Moreover, any creditor may lay an embargo on the value of this class of annuity, and recover it from the Government at the cost of the contracting party. The annuities purchased under Table III. are, on the contrary, *inalienable* under any other circumstances than a statute of bankruptcy. These alone can be looked upon as a *certain* provision against the wants of old age. Those who do not desire this certainty had far better keep their money in the savings' bank, where, if not taken out, it will accumulate at interest, and enable them to purchase an *immediate* Government annuity when they reach the age to want it.

To show by an example the working of Table III., let us suppose
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a prudent young man of 20 years of age determines to make a certain provision against want in old age. If he has laid by the sum of 9*l.* 9*s.* in the savings' bank, or elsewhere, he will at once be able to convert his deposit to that moderate amount into an annuity of 10*l.* *per annum*, to commence on his reaching the age of 65, secured to him, not on the faith of some precarious benefit society which may perhaps be broken up long before that time, but on the guarantee of Government: the same in fact upon which rests the whole National Debt. If he do not possess this sum, he can at all events have no difficulty in saving within a few months the small amount of 18*s.* 6*d.*, which will buy him an annuity of 1*l.* against the age of 65. In a few months more he may easily buy another pound, and continuing the process, before he reach the age of 25 or 30 at farthest, he may, by a very trifling outlay, have secured an annuity of 20*l.* *per annum* (or near 8*s.* *per week*) for the independent support of his latter years, if he live to advanced age. A pound a year only saved and applied in this way between the age of 15 and 30, will afford him the gratification of a certain independence in the decline of life. Of course a woman may do the same, or a married man for his wife or child. Moreover the Act empowers the Commissioners to contract for the payment of any sums (not exceeding 100*l.*) on the death of any party who purchases a proportionate life annuity; that condition being necessary to secure the Government against all danger from bad lives. The tables for this purpose have not yet been issued by the Commissioners, but we trust will not long be delayed.

In the meantime the offer of Deferred Annuities upon the terms we have indicated is a boon, in our opinion, of unexampled value to the great body of the industrious and poorer classes. It remains to be seen how many of their number will have the wisdom and foresight to avail themselves of it. We see on all sides evidence of the universal want of such a provision against the destitution which old age so frequently brings upon these classes. Domestic servants, clerks, governesses, railway and poor-law officials, shopmen, small tradesmen, and agriculturists, no less than artisans and labourers, know and feel the uncertainty of their future, and show their appreciation of the need of some security against want in the decline of life, by more or less imperfect efforts to supply this object through associations of various sorts. But as we have shown, in reference to friendly societies, it is an object which no private association, however promising, can effect with any approach to the complete and unimpeachable security which the Government guarantee affords, or (we may add) with the facilities for

omnipresent management which the Government possesses in the savings' banks, and the machinery of the National Debt Office.

We feel confident that the advantages held out by this Act only require to be made generally known to be universally acted on through the length and breadth of the land. It would be an act of wisdom if every father of a family, able to afford the moderate sum required for the purpose, were to purchase a Deferred Government Annuity of this kind for each of his children, and every husband for his wife, in order to place them beyond the possible reach of want in old age; for such an annuity once purchased is an inalienable provision. An annuity of 30*l.* per annum (which is the maximum permitted by the Act) would be sufficient for this most desirable end, being near 12*s.* a week, and would cost, if bought when the parties were young, but a trifle: for example, for a boy of 10 years old, only 33*l.* 15*s.*, or rather more than ONE year's purchase, the annuity to commence at the age of 60. If to commence at 65, only 18*l.* 7*s.* 6*d.* Every employer of labour on a large scale ought to make it a condition with his workmen that they should purchase a superannuation pension of the kind, by leaving a certain portion of their wages with him for that purpose. We believe something of a superannuation fund is already set on foot in many large establishments. It ought to be universal, and secured by investment in Government annuities. A very small fraction of the enormous sums annually consumed by the industrious classes in intoxicating beverages and tobacco would, if applied in this manner, secure to the whole body of them a certain and comfortable independence in the decline of life.

It is scarcely necessary to point out the immense advantage that would result to the cause of order, internal peace, and the maintenance of the national faith, were these offers widely and generally accepted among the industrious classes. Every purchaser of an annuity or life assurance would be bound to the common cause of security to property and faith to the public creditor in the full amount of his paid-for and expected benefit. The mere reduction of the burden entailed on the poor-rates for the maintenance of the infirm poor would be considerable. But the happiest results must be looked for in the encouragement at once, and the gratification such a provision would afford to the desire for independence which exists so strongly among the people of this country—in the opportunity thus opened to them by a very small amount of temporary sacrifice in their season of health and strength, to secure themselves and those dearest to them against the risks from which few in these days
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of any class can consider themselves wholly safe, of falling, in advanced age, into destitution, and being reduced, through unexpected contingencies, to the degrading condition of pauperism.

If we suppose the contingencies of sickness or accident to be provided against by the general establishment and adoption of Friendly Societies, and of infirmity from advanced years by the purchase of deferred annuities from Government, the sufferings to which the great bulk of the industrious portion of the population are continually exposed will have been mitigated to an almost incalculable extent, and their comfortable subsistence ensured almost beyond the chance of failure. There remains, however, a further object to be sought, in the contemplation of their wellwishers, namely, their rise in the scale of society through the accumulation of those savings which, even after providing in the ways we have recommended above, against sickness, accident, and old age, they can generally spare from the ordinary remuneration of their toil; and for this object the Legislature has provided the ready means in that admirable institution the SAVINGS' BANK.

Something, however, remains to be said on this score, and something of no little importance. In the case of these depositories for the frugal savings of the poorer classes, the first and most imperative element should be, of course, complete, unquestionable SECURITY. Otherwise how can we hope that these classes will be induced to make the sacrifices necessary for saving their money, or how can we in conscience venture to recommend them to deposit it in these institutions? But alas! experience, as we all know, has shown conclusively that the present constitution of savings' banks by no means affords this indispensable requisite. The security is perfect from the moment that the money has been received from the bank by the National Debt Commissioners. But in the interval between this receipt and the deposit in the bank, it is wholly without any safeguard at all, beyond the volunteer vigilance of unpaid and irresponsible trustees or managers, the amateur patrons of the concern. The valueless character of this safeguard has been unhappily evidenced in the frequent instances of insolvency of banks that have occurred in late years, generally owing to the embezzlement of the funds by some salaried clerk, whose astuteness has proved to be more than a match for the vigilance of irresponsible patrons. In the case of the Rochdale Bank, the defalcation reached to no less an amount than 80,000*l*. Much discredit has been thus cast upon these otherwise valuable institutions, and it is only wonderful that they have been still to so great an extent confided in. A Bill for the purpose of remedying their defects was proposed to the House of Commons by the Chancellor of the Exchequer in the Session of

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1853, but met with such vigorous opposition from the trustees and managers generally of the local banks, as to have been withdrawn for the time—only, we trust, to be introduced again at an early period, and enacted into law, at least as regards its essential principle. This principle was the proposal to the trustees and managers of all savings' banks of this simple alternative—either that they should undertake themselves to be responsible for the money received by them or their clerk from the depositors from the time of its being paid into the bank until it is remitted to the National Debt Office, or allow a Government clerk or agent alone to receive it, in which case the Government would itself undertake the responsibility throughout. Surely there ought not to be two opinions upon the justice—nay the necessity—of enforcing one or other of these alternatives. Every one must admit that the poor man who brings his hard-earned savings to the bank should have unquestionable security afforded him for his deposit. Well then, who is to give this? The trustees and managers? But that, it is said, they will not listen to. The Government? But then surely the Government must itself receive the money from the depositor *through an agent of its own*. The battle which the trustees and managers generally have been fighting, is to retain the receipt of the money for themselves or their clerks, and to throw the responsibility for its safe transmission to the National Debt Office on the Government, or on nobody!

There is nothing wonderful in the struggle made for this end—and hitherto with success—throughout the length and breadth of the land. The salaried officers of the existing banks are under the impression that by the proposed change their services will be dispensed with—a mistake, we believe, because as clerks will be still everywhere required, we think they are most likely to be continued in their offices by the Government under the new arrangement: however, such being their impression, they find no difficulty in organizing, by intercommunication, a general opposition to it, or in rousing the susceptibilities of the volunteer trustees and managers, with whom they are in constant intercourse, and who are themselves naturally unwilling to part with the small patronage and influence which their position (no doubt assumed from the most benevolent motives) confers on them. These gentlemen are easily led to consider the proposal as a slight upon themselves—almost an insult. 'It seems like doubting their vigilance or their honesty! As to making themselves pecuniarily responsible, that is out of the question. But morally responsible they consider themselves, to the extent at least of taking every reasonable precaution in superintending the receipt and

and safe transmission of the money by their clerk,' and so forth. The only and the all-sufficient reply to this (and it forms the substance of the many hundred petitions that were presented against the Bill last year from as many sets of trustees and managers) is this:—It is not *moral*, but *pecuniary* responsibility that the poor depositors *ought to have*. If you, gentlemen, are willing to give it, no one doubts your solvency; it will be accepted as all-sufficient. But if you refuse this, in the name of justice, of honesty, and of that benevolence for which credit is given you in having undertaken your gratuitous office, do not stand in the way of the offer which is now made to the depositors, of full Government security for every farthing they may bring into the bank, upon the one indispensable condition of course, that *the Government shall receive the money for which it offers to be responsible*. Your very refusal indicates a latent suspicion of the possibility of loss. Do you persist in throwing this risk (which you will not incur yourselves) on the poor depositor, whom you induce, by the advertisement of your names as 'trustees,' to trust you with his money?

In Heaven's name let the gentlemen of England either accept this trust in literal earnest, and give their bond as well as their names for its fulfilment; or allow the Government to take the money from the depositors directly, and give them its all-sufficient security in return! We cannot believe that they will persist in lending their names to a delusion—a sham responsibility, which proves at a pinch to be none at all—or resist the benevolent purpose of the Government to substitute in its place a system of unimpeachable security for these almost sacred deposits—the small savings of the industrious and provident poor!

The truth is that these banks have outgrown their general character, and are no longer to be considered private associations of a *quasi* charitable nature, got up by benevolent persons for the collection and safe custody of the little savings of their neighbours. They are, or ought to be, considered public institutions, branches of the National Debt Office, for the investment in Government Securities of the deposits of the industrious classes. The time has been when the publication of a list of respected names, as trustees, was essential to inspire the confidence of these classes in the safety of their deposits; but they are more enlightened at present; and the disclosures made public of late as to the legal irresponsibility of these nominal trustees, and the consequent losses entailed on the depositors in several banks, have changed the current of general feeling on the subject. We cannot doubt that if two savings-banks were opened in any part of the country, the one without any list of trustees or managers, but

but avowedly a Government office, pledging the faith of the State for all money paid in, the other with a showy list of wealthy trustees, but likewise with a clear understanding (printed on the fly-leaf of the deposit-books) that they are not (and that nobody is) responsible for the safe conveyance of the money paid in to the Government, it does not, we say, admit of a doubt that the first would not only be generally preferred, but in all probability exclusively resorted to by the neighbourhood; and this consideration ought to be conclusive, since, surely, with a view to encourage to the utmost the accumulation of such savings, the best and the most acceptable security that can be provided ought to be the one preferred by the Legislature, and by all who have this important object at heart.

With respect to some of the minor points of the late Government Bill a difference of opinion may fairly arise. The question of requiring each depositor's book to be produced periodically for examination is one of these. It is well known that great indisposition is felt by many depositors to attend on fixed days, or do any thing that may allow their friends to ascertain how much money they possess in the bank. It might answer every purpose if an annual statement of his account were sent by post to each depositor; or (as is practised already in some banks) that each depositor should have a letter and number entered on his book, and a statement of all the accounts under his particular letter being annually forwarded to him, he would be enabled to check his own account without betraying to any one about him which it is.

There is, of course, a very general objection raised to the proposed reduction of interest payable to depositors, and still more to the fixing a maximum limit to the expenses of the bank. The principle of a fixed *net* interest on all deposits is, we think, the true one; but surely this need not be lower than 3 per cent. Five shillings per cent. additional ought to defray the cost of management under a proper system, though, of course, it will not pay for the building of the magnificent premises and excessive salaries which have not been unfrequently furnished under the old system, in which the managers are allowed to retain from the depositors whatever percentage they please. It would, we are convinced, be a false economy in the Government to cut down the interest paid on the savings-banks' fund. It must be remembered that the maximum amount of each deposit is by the Bill brought to a very low amount (only 100*l.*), and that by the clauses intended to prevent one person holding more than this as nominal trustee for others, as well as through the facilities offered for the investment in the funds of all deposits above 50*l.*,
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the depositors will be confined individually to very small sums, and will in future belong exclusively to the poorer classes, who might, with sound policy, be encouraged in habits of economy, even at some pecuniary sacrifice on the part of the State. It should be recollected, too, that the State charges $3\frac{1}{2}$ and 4 per cent. on its loans to the wealthy classes, on the very best security, and may therefore well afford to pay rather more than 3 per cent. to its poor creditors. Looking also to the vast saving in the cost of crime and indigence which must be occasioned by the habitual accumulation of small savings among the poorer classes of society, a few thousands a year might be wisely risked in its encouragement.

It is very desirable that in making the considerable alteration now unavoidable in the system of savings'-banks the opportunity should be taken of consolidating all the Acts relating to them into one statute; and we would urge the same likewise with respect to the Friendly Society Acts. Indeed, the Committee of the House of Commons which sat upon this last subject in the past session were evidently prepared to recommend such a consolidation, if time had allowed its preparation. If, as we trust will be the case, the Legislature should carry at once into effect the remaining improvements here suggested in the laws which relate to these valuable provident institutions, we shall entertain sanguine hopes as to the result. The higher and wealthier classes will no doubt, in the active spirit of benevolence which characterises the age, do their best, by advice, explanation, and assistance, to encourage their poorer neighbours, friends, and workpeople to avail themselves of the advantages thus offered to them. We scarcely see what should prevent any adult individual of the industrious classes from becoming a member of a friendly society which shall ensure him medical aid and a maintenance in sickness, and a respectable funeral on his death—the holder of an assured Government Annuity in his old age; and also of an annually-increasing fund in the savings'-bank, for ultimate investment, perhaps, in some active business, or to be bequeathed as a future provision for his widow or children. All this is within the reach of every frugal and prudent person who prefers to present gratification the consciousness of a secure provision against the wants of the future; the certainty of an independent maintenance in the evening of his days; and the reasonable prospect of an improvement in his position of life.

ART. VIII.—*A Month in the Camp before Sebastopol.* By a Non-Combatant. London, 1855.

IT will be our object in the following pages to place before our readers, as far as we are able, a truthful history of the expedition of the allied armies to the East. To assist us in doing so we have availed ourselves of original documents and journals kept on the spot, and we believe that we shall be able to throw some light upon events which are still obscure or misunderstood. In venturing to criticise any portion of our operations, we are not unmindful of the military maxim attributed under various forms to so many great commanders, 'that war consists of a series of blunders, the victory remaining with him who commits the fewest.' At the same time we consider that we have a full right, without exposing ourselves to the charge of faction or of presumption, to comment upon and examine the movements of our army, and the results hitherto attained by the expedition in which we are engaged.

War having, on the 27th March, been declared against Russia, the allied fleets, already in the Baltic and Black Seas, were free to attack the enemy. The first act of hostility of any importance in which we engaged was the ill-executed and useless bombardment of Odessa. The reason assigned for this measure was unnecessary and absurd. The firing upon a flag of truce, however gross a violation of the law of nations, was not needed as an excuse or a justification for a well-conducted attack upon so important a town. Had it been so, we should have been engaged in an act of revenge, and not of war. Odessa is both a commercial and military depôt—the great storehouse of southern Russia. Its granaries, which in time of peace supply half Europe with corn, furnish in time of war the means of subsistence to vast armies. As a station, therefore, midway between the Principalities and the southern Provinces of Russia, its destruction becomes almost a necessity before military operations can with any prospect of speedy success be undertaken either on the Danube or in the Crimea. The place has no historic traditions. Its inhabitants are chiefly, if not exclusively, engaged in trade, or connected with the Imperial military and naval establishments. The claims of humanity might have been amply satisfied by summoning the garrison to lay down their arms and to surrender the government stores and public granaries, and in the event of a refusal by giving the inhabitants sufficient time to depart with their property before commencing a bombardment or an assault.

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After the place had been taken or destroyed—which we presume it would have been without much difficulty—two or three ships of war, stationed in its secure anchorage, would have prevented the reconstruction of any new defences, and, to a certain extent, the passage of any fresh troops. It is impossible to overrate the importance this check upon the movements of the enemy would have been to the allies. From the vast granaries of *Odessa* the Russian armies have been supplied. It has served as a resting place and has furnished the means of transport to those reinforcements which have been poured into the Crimea and are now arrayed against us. Our attack upon it was ill conceived and ill executed. The threats we had vauntingly made were not fulfilled. The allied fleets retired having but half accomplished their object, as announced to the Russian commander—the destruction of the batteries and the ships in the harbour. Some pretext was thus afforded to the enemy to boast that we had been driven away by the vigour of his defence. For the first time we were made aware of the merits of the Russian artillery. Our own navy bear willing testimony to the skill and courage with which the batteries were defended, and readily admit that the honours conferred upon the officer who commanded in them were well bestowed.

On the 12th of May the *Tiger*, whilst cruising off *Odessa* in a thick fog, grounded about four miles from the town. As soon as she was observed, the Russians opened a fire upon her with field guns. Her commander, Captain Giffard, having been mortally wounded, the officers and crew surrendered themselves prisoners of war, no effort having, it seems, been made to destroy the ship or to escape in her boats, although two English armed steamers were known to be near. Even the flags and ship's papers were allowed to fall into the enemy's hands, and furnished him with the first trophies of the war. There is reason to believe that the heavy guns were subsequently removed from the wreck and turned against us at *Sébastopol*.

It would appear that up to this time the British Government had decided upon no definite plan of operations, although they had despatched troops from this country to the Mediterranean. They had neglected to obtain any information as to the strength and position of the Ottoman troops under Omar Pasha; they remained in almost complete ignorance of the nature of the momentous struggle then taking place on the frontiers of the Principalities. It was not until months after hostilities had actually broken out between the Czar and the Porte, that Sir John Burgoyne was sent to Bulgaria to report to the British Government upon the state of the Turkish army. The condition
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of the Ottoman troops, so different from that of English soldiers, and the numerical superiority of the Russian forces, led him to anticipate not only the speedy fall of the fortresses on the Danube, but the advance of the enemy upon Adrianople. Convinced that Omar Pasha could not meet the Russians in the field without running the almost inevitable risk of a defeat, which might end in the total destruction of his army and an uninterrupted march upon the capital, he not only advised the abandonment of the line of the Danube, but even expressed his doubt as to the possibility of the Turkish commander being able to hold that of the Balkan. The danger appeared to him so imminent that he recommended immediate measures for the defence of Constantinople and the Dardanelles. He suggested for that purpose a line of defences across the Tauric Chersonese. It was, we have reason to believe, the urgency of the danger to the Turkish capital, as represented by Sir John Burgoyne, which induced the Emperor of the French to send without delay a body of troops to Gallipoli.

Notwithstanding the anticipations of Sir John Burgoyne, founded, no doubt, upon an accurate estimate of the numbers and condition of the Turkish troops, though not upon a sufficient knowledge of their peculiar character, and of the qualities of their able commander, the fortresses and works on the Danube were held with extraordinary courage and determination, and the Russians were foiled in every attack upon them.

Up to this time we had merely thought of guarding the capital against a *coup-de-main*; the possibility of a war, if we were to judge by their deeds, appears scarcely to have been contemplated by the Government; on the contrary, they still acted as if they entertained more than hopes of peace. But the courage displayed by the Ottoman troops at Kalafat, Cilate, Giurgevo, and Silistria had excited general sympathy and admiration, and the people of this country began to perceive that although making professions of alliance and friendship to the Sultan, we were permitting his army to wage an unequal warfare on the Danube, whilst our own remained inactive at Gallipoli and Scutari; Ministers, therefore, yielding as usual to the popular feeling, decided upon taking one more step in advance, and our troops were ordered to Varna. Notwithstanding repeated and most urgent remonstrances, every measure necessary to fit our army for a campaign had been neglected. On the arrival of our troops at Gallipoli it was found that no preparation whatever had been made for their reception. The want of boats for landing, of commissariat, and of proper interpreters to communicate with the authorities and the inhabitants of the country, caused great delays

delays and embarrassment, which were, it will be remembered, severely commented upon in England. It might have been hoped that the results of this culpable neglect would have proved a warning for the future; but so far from such having been the case, our army was hurried to Varna without any better arrangements for its disembarkation or its future employment. Ministers had been forewarned, that, owing to the presence of two vast armies, the northern provinces of Turkey in Europe were destitute of almost all necessary supplies, as well as of the means of transport absolutely required by an army entering upon a campaign. The fatal nature of the climate in the neighbourhood of Varna was especially pointed out to them. The wooded valleys and marshy lakes near the town are the hotbeds of the most pernicious fevers; and it was foreseen that if the pestilence which then threatened Europe were unfortunately to fall upon the British army, it would on such a spot show itself with ten-fold virulence. We have been credibly informed that before a position for encamping our troops was selected, a German doctor, who had been long connected with the Turkish quarantine establishments in Bulgaria, and was consequently well acquainted with the climate of most parts of that province, was requested to frame a sanitary map of the country. On this map, whilst many places were indicated as '*très malsain*,' Devna and the neighbourhood of Varna were denoted '*pestilentieux*'! These localities were chosen for the encampments of our devoted troops, who were landed without any means of transport to enable them, even if required, to move ten miles into the interior!

It has been said that the presence of the allied armies at Varna encouraged the Turks in their heroic defence of Silistria, and compelled the Russians to raise the siege; the moral effect of our presence thus avoiding the necessity of an advance. Admitting this assertion to be true, it is no justification of the conduct of those who sent our troops there with the express intention of giving effective aid to the Ottoman army, but without the means of making a forward movement or of entering upon a campaign. The sudden raising of the siege of Silistria, to whatever cause it may be attributed, was to us a matter of equal surprise and congratulation.

The terrible history of the visitation of the cholera amongst our troops will be fresh in the memory of our readers. The British army had been reduced, not only by this scourge, but by a prolonged state of inactivity, and by the enervating effects of the pestilent climate of the valleys in which they were encamped, to a state of despondency—we might almost write
despair

despair—which it would be difficult to describe. A regiment consisted of but three or four hundred weak, sickly men. Those who had been the strongest, tottered under the weight of their knapsacks. With a sad countenance our soldiers wandered through the silent camp, or sat listlessly watching the mournful processions which never ceased moving towards the spreading grave-yards. Those who yet lingered on prayed to be led, at whatever risk, against the enemy, rather than be left to die an inglorious death.

Ministers were pressed anew by the popular clamour; they felt that another effort was necessary to save themselves from the result of their uncertain and tardy policy. They hastily, to judge again by their conduct, determined upon an expedition to the Crimea. At length the orders to prepare for embarkation were communicated to the allied armies. The prospect of speedily facing the enemy had the effect which might have been anticipated on British troops. The general despondency was turned to hope. Men who had been scarcely able to drag their weary limbs from tent to tent, gained almost instantaneous strength, and the voice of merriment and the bustle of preparation were once more heard in a camp which for weeks had been sad and silent as the grave.

It was not, however, until the 7th of September that the allied fleets sailed for the Crimea. There had been numerous causes of delay. The means of embarkation and disembarkation had not been provided. We had deferred to the last moment the construction of the proper boats for landing our artillery and cavalry. Through the exertions of Sir Edmund Lyons, who proceeded to Constantinople and personally superintended and hastened the arrangements, the English troops were at length enabled to embark—an operation which was effected without accident through the admirable management of the officers and seamen of the fleet. Owing, however, to some backwardness on our part, the French were ready and sailed from Varna two days before us. With the Turkish squadron they were to await us off Cape Tarkan. In the meanwhile Sir Edmund Lyons, Lord Raglan, General Canrobert, and several of the officers of the staff of each army, proceeded in the *Agamemnon*, the *Samson*, and *Caradoc*, to examine the western shores of the Crimea, with a view to find a suitable spot for landing the allied armies. A previous survey had been made of the same coast by a detachment of the British and French fleets. The enemy had observed from our movements that attention had been especially directed to the mouths of the Alma, Katsha, and Belbec rivers; accordingly, the '*Terrible*,' on revisiting the coast a short time after, found

found troops assembled and works commenced at all these places.

All idea of attempting a landing to the south of Sebastopol had been abandoned, the precipitous nature of the southern coast forbidding any safe anchorage except in the small harbour of Balaklava, into which, if even weakly defended, it would be almost impossible to force an entrance. The deep bays in Cape Chersonese were too near to Sebastopol. It remained, therefore, to find a suitable spot to the north of the town.

In choosing a place for landing, two things were essential—a low shelving beach, protected as far as possible from the prevailing winds, and an adequate supply of fresh water, not only at the point of disembarkation, but at regular intervals on the road to Sebastopol for the troops during their projected march. The coast between Sebastopol and the small stream of the Bulganac is formed by high cliffs of earth opening into narrow valleys where the Belbec, Katsha, and Alma fall into the sea. The mouths of these rivers would have afforded suitable landing-places, but it was of the utmost importance to disembark our troops—the greater part of which had not been under fire before—without exposing them to loss when unable to offer any resistance to the enemy. To the north of the Bulganac the undulating steppe subsides into a low champagne country. Here and there, as it approaches the coast, it falls even below the level of the sea, which has encroached upon the land during the tides caused by heavy gales from the south, forming extensive lakes or lagunes, separated from the main by narrow banks of sand and shingle thrown up by the waves. A small bay, near one of these lakes, about twenty miles to the south of Eupatoria, was chosen as the most favourable spot for the disembarkation of the allied armies.

On the morning of the 11th of September the French and Turkish squadrons—twenty-nine stately ships—were sailing majestically in order of battle, within sight of Cape Tarkan, the appointed place of rendezvous. They were waiting the junction of the British fleet, which, with its vast convoy of transports—near four hundred sail—now rode at anchor in the open sea about forty miles to the northward, their tall masts and slender spars seen far and wide above the motionless waters. Line-of-battle ships, steamers, and merchantmen lay side by side, each bearing its living burden. Amongst them glided the swift galleys of the men-of-war; flags of many colours, signals to distant vessels, fluttered in the morning breeze. As the sun appeared, the rolling of drums, the braying of trumpets, the sounds of martial music, and the clashing of arms filled the air. Never
had

had the naval power of England and her infinite maritime resources been so proudly displayed.

The three war-steamers having accomplished their mission on the coast now returned to their appointed stations; the *Agamemnon*, winding her way snake-like through the crowd, dropped her anchor near the admiral's ship. A last council of war was held on that eventful morning, on board the *Caradoc*. After an animated discussion it was decided that the fleet should sail without further delay, and that a landing should be effected on the spot we have described. It is not perhaps one of the least remarkable facts in the history of this expedition, that, *after* the embarkation of the allied armies and the departure of the fleets from Varna, doubts should still have been entertained as to the practicability of a descent upon the Crimea; and that it was only at the very last moment that it was decided to persevere in the enterprise. No time was now lost in making the general signal for sailing. Innumerable flags responded to the order, and sent it from vessel to vessel. Suddenly the dark smoke rose from a hundred chimneys, and numberless white sails glittered in the sun. The moving mass now gradually formed into seven long lines, the outermost consisting of men-of-war to protect their charge from the enemy.

During the night a squall scattered the convoy, and in the morning most of the sailing vessels were far out of sight. An adventurous enemy might, with fast steamers, have inflicted an almost irreparable injury upon us, but no enemy appeared. Towards evening the straggling transports were again brought together, and were anchored for the night off a low coast about 15 miles to the north of Eupatoria. On the following morning the French and Turkish squadrons joined the British fleet, and the signal to weigh having been made at daybreak, the armada was once more in motion. A fresh breeze from the land filled the broad sails of the men-of-war as they glided by a low coast rich in villages and heaps of corn. In the afternoon the order was given to anchor in Eupatoria Bay. The town was soon after summoned, and, being without the means of defence, at once surrendered. It was not, however, formally occupied until two days after.

Several days having been lost by needless delays, the commanders of the allied forces were now impatient to effect a landing. Admiral Dundas unfortunately changed at the last moment the preconceived plans. Much confusion, and consequent loss of valuable time, ensued, which might have led to serious results had our operations been opposed by the enemy, and

and which subsequently proved the source of considerable inconvenience. The order of disembarkation was similar to that of sailing; they had both been devised by Captain Mends, the flag-captain of the *Agamemnon*, a most able and energetic officer.

Never had so large a fleet been brought together, and never had the power of steam been employed on so vast a scale. The sailing vessels were divided into squadrons or detachments; two being allotted, with a few exceptions, to each merchant steamer. The whole were then formed into seven lines, the inner or that nearest the coast bearing the light division, the first division coming next, and the others following in their order. Beyond the infantry were the cavalry and the transports with the heavy guns of the siege train. The grand reserve magazines were outside the whole. Each division was distinguished during the day by its flag, and at night by the number of lights at the mizen. In addition, each vessel had the number of the regiment and the nature of the troops it bore marked in large letters on her side. The *Agamemnon*, *Sanspareil*, *Diamond*, and the remainder of the squadron, under the immediate command of Sir Edmund Lyons, with the small steamers to be used for towing and for disembarking the troops, kept the inshore station; whilst Admiral Dundas, with the rest of the fleet sailing outside the whole convoy, were to protect it to seaward from the enemy. To every division was, moreover, attached a steamer of war to render any assistance that might be needed. The boats of each vessel were so told off that had the original plan not been unhappily changed, the whole British force could have been disembarked, even under fire, in one day. Every boat had its appointed place and crew, and the clearest directions were given to the officers in charge and to the men under their command, to avoid confusion in the event of any attempt being made to oppose the landing. These directions were communicated to each commander, accompanied by a sketch of the positions to be taken up by all the vessels.

At midnight the anxiously expected signal was given, and the steamers and transports bearing the light division weighed and formed into line. To prevent confusion, each division succeeded at an hour's interval. The *Agamemnon*, hurrying to and fro, hastened the tardy; brought up the stragglers, and maintained the order of sailing. The rapid motions and skilfully directed evolutions of this magnificent vessel—as much under control as the smallest ship's-boat—excited the wonder and admiration of the fleet, and earned for it the soubriquet, which it afterwards bore, of 'Lyons' brougham.' The two admirals, Dundas and Hamelin, were, by previous agreement, to take up a position together

together in the middle of the bay chosen for the landing-place, thus dividing it into two equal parts for the convenience of the two armies. The French commander first approached the shore, and, not adhering to the original plan, anchored at the northern extremity of the bay, thus appropriating the whole to his troops. The change, though unexpected, was advantageous to both armies, as they could not have disembarked together in so small a space without considerable disorder. The *Agamemnon* sought an anchorage about a mile to the northward, opposite a broad lagoon, which afforded an effective protection to our men on the land side. It would have been useless to wait for the British admiral, who did not leave Eupatoria until nearly the middle of the day, when he anchored far out to sea, where he remained during the disembarkation. Admiral Hamelin had boldly brought his vessel close in shore, and her boats were amongst the first which touched the enemy's coast. The general departure from the preconcerted arrangement gave rise to much confusion. One transport, containing the artillery, grounded on the coast; several vessels fouled one another; and the order of sailing having been broken through, few took up the places allotted to them. Our allies had already been engaged for nearly two hours in disembarking troops before we were able to land a single man.

No attempt whatever was made on the part of the enemy to interrupt our operations. The inhabitants of the country appeared scarcely to notice the invader. Carriages rolled along the high roads, and long strings of carts bore the produce of the fields to the villages. An officer, escorted by a small body of Cossacks, rode down to the sea-shore. Dismounting, he seated himself upon the beach, and, taking out his tablets, appeared to be making careful notes of the proceedings of the allied fleets. In this occupation, although within gunshot, he was not disturbed.

The signal having at length been given to commence landing, boats laden with men darted from the sides of every vessel. Amongst the first to tread the enemy's shore was Sir George Brown. Accompanied by a detachment of riflemen, he advanced to a ridge overlooking the open country. A party of Cossacks were driving inland a convoy of carts laden with provender and corn. A few shots, and the advance of a small body of troops of the line, soon drove the horsemen from their charge. The waggons thus captured formed the nucleus of a native transport service, which, however defective, proved of the greatest use in our subsequent operations. From information afforded by the drivers, and by many peasants who afterwards came to
our

our camp, it appeared that the native population was by no means well affected to the Russian government, but that, on the contrary, it was not unwilling to welcome the invaders. A barbarous policy had almost destroyed the Musulman race. No descendants of the khans or chiefs who once ruled over the Tatar tribes are now to be found in the Crimea; they migrated long ago to Turkey. The last link between the Crim Tatars and this country had been of late years broken by an imperial edict, which forbade Mohammedans seeking employment in the Turkish service, as had formerly been their wont. But probably the source of greatest discontent was an ukase prohibiting the pilgrimage to Mecca—a religious duty imposed upon all true believers. By these vexatious restrictions it had evidently been the object of the Russian government to put an end to all connection between the Musulman inhabitants of the two empires. The Tatar families still inhabiting the Crimea are neither wealthy nor powerful. The warlike character which once distinguished the race has been completely destroyed. The men were long since disarmed, and scarcely a knife has been left them. From them, therefore, whatever may be their feelings toward us, we could not expect any material help. At the most they could only bring us supplies for our army, and afford us such information as we required regarding the nature of the country and the position of the enemy.

The Crim Tatars have long since abandoned their nomade life, and now reside in villages; but their huts are rude and ill-built, and their habits still bear the traces of their former wandering life. Their language is a hard guttural Turkish, nearly resembling that of the tribes of northern Persia. They retain to a remarkable degree the peculiar characteristics of the ancient races of Central Tatory—the high cheek-bone, the long, narrow, oblique eyes, the flat nose and dilated nostrils, the thick lips, and square squat figure. As a party of village chiefs drove into the camp in their primitive covered waggons, their grotesque appearance at once called to mind those well-known groups on our domestic china. The Tatars of the Crimea still use the two-humped camel, that beast of burden peculiar to the great deserts of Central Asia. Unlike the Arabs, they train these animals to draught.

The sailors of the fleet, encouraged by the example of their officers, worked with unremitting energy and zeal. Two small steamers, the *Minna* and *Brenda*, built for the navigation of the Danube and purchased by Sir Edmund Lyons, did good service, each landing at one trip a whole regiment of the line. Before nightfall 20,000 infantry, 36 guns, and a large number of horses, mostly belonging to the staff, were disembarked without accident.

The French had landed nearly the same number. Forty thousand armed men, with a powerful force of artillery, were thus thrown in one day upon a hostile coast, a fact unprecedented in history, and the successful accomplishment of which forms an important epoch in the annals of the art of war. The power of steam in effecting a sudden descent upon an enemy's country by sea was fully established.

During the night, a strong breeze springing up from the southward, a surf set in which retarded the landing four days, and caused some loss in horses and boats, giving the allies reason to regret the many inexplicable delays which had occurred on the passage from Varna. On Monday the 18th the armies were ready to march.

As yet, with the exception of a few isolated Cossacks who watched the movements of the allied armies, no Russian troops had been seen. The invaders were allowed to establish themselves without any opposition whatever on Russian soil. The steamers sent to reconnoitre the coast had reported that a strong camp had been formed upon the heights to the south of the Alma, but between the place of landing and that river there was no trace of the enemy. This apparent want of vigour created general surprise. Although the landing could not, perhaps, have been prevented, yet by a determined opposition great difficulties might have been thrown in the way of the allies. Owing to our want of cavalry, field batteries, judiciously placed, might have materially impeded our operations. The British troops, who, from forming the left wing and marching inland, were most exposed to attack, had so little experience in campaigning, their stragglers were so numerous, and their pickets as yet so little acquainted with their duties, that an active body of cavalry might have caused them great loss. The Cossacks have not sustained their ancient reputation. They have rarely been employed during the campaign, and have never stood, even before a very inferior force. Our soldiers soon began to treat them with contempt, and a story was some time afterwards current, when the army was before Sebastopol, of a private armed with a stick only who made one a prisoner and brought him to the British camp.

The want of proper means of transport was felt as soon as the troops had landed. The tents which had been given out to the various regiments on the second day were re-embarked before the army marched, because they could not be carried. Nearly three weeks elapsed before they were again issued; the men were consequently exposed to cold and heavy dews at night, after the oppressive heats of the day. The results were inevitable. Cholera soon broke out with fresh virulence; dysentery and diarrhoea spread

spread through our ranks. There were no means of moving the sick. The ambulances or waggons constructed for this purpose, of which so much had been heard, and to which appropriate places in each division had actually been assigned in the memorandum issued by the head of the medical staff, had been left behind. Those men who fell exhausted were left to die by the roadside. The want of transport was felt in a thousand other ways. Owing to it the regimental officers were compelled to carry their own baggage and provisions for three days. Many men of weak health, some still suffering from the effects of cholera and fever, sank under this hardship; hence the large number of deaths amongst the officers as compared with the men. The French army has not been exposed to this disadvantage. Its officers have not passed a day without their tents, nor have they had to bear a load upon their backs, it being well known that an officer thus hampered cannot efficiently discharge the numerous duties which devolve upon him. Nor has the soldier suffered from want of covering, for each man carries with him part of a small tent, which, when fastened to the other parts carried by his comrades, forms an efficient shelter from cold and rain. These small tents are even used by the pickets. They were invented by the men themselves, and are universally adopted in the French army. Perhaps when war is over, and they are no longer needed, we may begin to think that they might be beneficially introduced into our own.

To explain the reason why the French possessed the means of transport, it is said that they sent a smaller army by 3000 men than we did to the Crimea. But it must not be forgotten that even in proportion to the troops embarked their ships were greatly inferior to ours in number and size. Instead of those gigantic steamers, which bore a regiment of foot and sometimes almost a regiment of cavalry, they had but vessels of small tonnage, mostly Genoese, Sardinian, and even Turkish brigs. And yet they not only brought with them such baggage animals as were absolutely necessary, but ambulances for the sick and wounded. The true secret of the difference is, that they have some organization and a system: we pretend to neither one nor the other. From this want, in so many cases, of order and forethought our unfortunate troops have been exposed to those privations and sufferings which have reduced to nearly one-half its original numbers the finest army in the world.

At daybreak on the morning of the 19th the order was given to march. The French troops, long accustomed to a camp life, were the first to advance. Attached to them were about 7000 Turks. They rested on the sea, the British forming the left wing,

wing, and thus taking the post of danger and honour; our flank was protected by the light cavalry.

The allied armies suffered severely during the day's march, although not a long one, from the heat of the sun and the want of water. The country over which they advanced was devoid of wood and thinly inhabited, from its nakedness resembling one of the poorest provinces of Turkey. There were no enclosures or villages to impede their progress. The few roads which traversed the steppe were mere beaten tracks—in winter almost impassable. The Bulganac, a sluggish muddy stream, winds beneath cliffs of earth, from the top of which a gentle slope, broken by a few ravines and irregularities of the soil, leads to the Alma.

The harvest had been scarcely got in, and ricks of fresh-cut corn and hay dotted a broad valley to the south of the Bulganac. Amongst them, as immoveable and scarcely to be distinguished from them in colour, were about one hundred horsemen. They were the advanced guard of a strong body of cavalry and artillery which were seen to issue from the village and gardens on the banks of the Alma, and to deploy on the open ground. Two batteries, of six guns each, their carriages and tumbrils painted light green, were supported by two regiments of cavalry and about 2000 Cossacks. As our skirmishers and light cavalry appeared on the crest of the hill, the enemy's *videttes* gradually retired, whilst their batteries rapidly advanced, covered and supported by the main body of the Cossacks and a regiment of dragoons. They formed and opened fire as the British light division came in sight. Their attack was soon returned with great effect by Captain Maude's troop of Horse Artillery.

The enemy, having merely intended to reconnoitre the advancing armies, retired. Apparently to cover their retreat, a second regiment of dragoons, distinguished by their white jackets and grey horses, advanced at full speed and formed with much skill on a knoll opposite the French right. Some guns having been turned upon them, they withdrew in disorder with as much precipitation as they had advanced. Their own artillery, mistaking them for French cavalry, opened upon them, killing and wounding seventeen of their number.

Not being pursued, the whole force fell back in good order, and crossing the Alma rejoined the Russian army. The country which they had occupied was again deserted; but on the hill-sides beyond the Alma there were dark moving masses of men, and the glittering of steel. The narrow stream had worn its bed through an undulating steppe, leaving an eminence between two and three hundred feet high. These precipitous cliffs opened about two miles from the sea into a spacious amphitheatre, intersected

sected by deep ravines and narrow ridges. Upon the eastern slope of this amphitheatre could be distinguished an earth-battery containing heavy artillery. This earthwork was separated by a narrow valley, or rather ravine, from a field-battery of twelve guns, placed in position somewhat higher up the slope. Behind the left (or Russian right) battery, and between it and the crest of the hill, were two dense squares of infantry; and this part of the position was covered or flanked by a battery of heavy guns, placed behind a breastwork on the heights, at the Russian extreme right. One or two white tents shone on the crest in the centre of the amphitheatre; and bodies of infantry, cavalry, and artillery were scattered over the slopes and on the summit of the ridges overhanging the Alma. Such was the position which was chosen by Prince Menschikoff to dispute the advance of the allied armies, and where he awaited with confidence their attack.

The allies bivouacked for the night on the rising ground to the south of the Bulganac. Their fires shone brightly on the hill-side, and seemed reflected back by the Russian lights on the opposite heights. The plan of attack was speedily agreed upon. One French division, under General Bosquet, accompanied by a part of the Turkish contingent, advancing along the sea-shore, was to force the heights, and to turn the enemy's left flank; the remainder of the French army, when this manœuvre had been successfully accomplished, was to attack that part of the Russian centre which rested on the high ground above the village of Almatomak. The English, retaining their inland position, were to wait beyond the village of Bouliouk until the French had established themselves on the heights, and were then to turn the Russian right, avoiding as much as possible the fire of the centre batteries. The inshore squadrons of the two fleets, chiefly consisting of steamers, were to keep close to the coast, to cover the advance and attack of General Bosquet's division.

As the morning broke a thick haze covered the land, but was soon dispelled by a light breeze. No movement was perceptible in the Russian camp, and some believed that their strong position had been abandoned; but soon the sun shone upon the glittering bayonets and the green carriages of the artillery. The two dark squares again gradually formed behind the principal battery; cavalry and infantry gathered on the heights. In the plain, to the north of the Alma, a few Cossacks galloped to and fro, whilst others sat motionless on their horses, watching the movements of the allied forces.

At daybreak the *Agamemnon*, accompanied by a squadron of English and French steamers, moved majestically along the coast,

coast, and took up a position off the mouth of the Alma. Soon after, a column of infantry, preceded by skirmishers, descended from the hill above the Bulganac, and slowly advanced by the sea-side. This was General Bosquet's division, accompanied by the Ottoman troops. They were soon followed, more inland, by the main body of the French army, formed by the divisions of Prince Napoleon and of Generals Canrobert and Forey. The whole halted about a mile from the Alma. The British troops were not yet in motion. Unaccustomed to the bivouac, they required more time to leave their night's resting-place, and some hours were thus lost, which would have been invaluable to the allies at a later period of the day.

It was ten o'clock before the British columns, like bright patches of scarlet in the landscape, their bayonets all glittering in the morning sun, were seen pouring down the hill-side. They had formed into order of march; the light and second divisions in advance; the first and third in the centre; and the fourth, with the baggage and commissariat, in the rear. Between the divisions was the artillery; and the rifles in skirmishing order protected, with the light cavalry, the left flank and front. The English halted as they came into line with their allies; the second division soon after deploying into four squares, so as to meet the extreme left of the French. Both armies then moved forward in one united mass. The few Cossacks who had been stationed as videttes to the north of the Alma now fell back. A thick smoke, mingled with bright flames, rose from amidst the trees. The village of Boulouk had been fired by the retreating horsemen. Again both armies halted and then formed into order of battle.

It was a moment of the deepest anxiety to those who gazed upon the scene. A terrible struggle, upon which depended the very fate of the allied armies, was about to take place. No one doubted British valour; but a task was there which human strength could scarcely accomplish. Most of those in the British ranks, who were shortly to meet in deadly strife an enemy superior in numbers, and holding a position that seemed almost impregnable, had never seen war before. The lofty cliffs, and the precipitous slopes, bristling with artillery, might well appear an inaccessible barrier, defying all attack. Here and there a pathway led up the ravines which had been furrowed by the winter rains. But what enemy would attempt to drag artillery up those narrow and precipitous tracks? The guns which swept the approaches far exceeded in size those of the allies. Their position had been carefully chosen, and their range was accurately fixed by marks known to the Russian gunners, who could
thus

thus open their deadly volleys upon our advancing lines with unerring aim. Across a part of the slope itself was a trench of sufficient depth to protect the Russian marksmen, and to be an impediment to the assailants, whilst field-batteries occupied almost every eminence commanding the open ground, over which the attacking troops would have to advance. The banks of the river were steep, and were sufficiently wooded to afford shelter to riflemen, who, concealed in the village and in the vineyards, poured an unceasing fire into the front-ranks of the allies. The wooden bridge across the Alna had been partly destroyed, but the stream was in most places fordable.

It was nearly one o'clock before General Bosquet could lead his column along the shore to open the attack. A few riflemen had attempted to occupy the heights immediately above the sea, but had been speedily dislodged by the fire of the French steamers. The river winds at the very foot of the cliffs. In the latter part of its course it is only fordable at its mouth, where a bank of sand forms a bar, upon which the water scarcely reaches to a man's middle, but over which on this day the sea broke in a foaming surf. Captain Peel, regardless of the enemy's marksmen on the heights above, had early in the morning placed a boat across this narrow ford, to facilitate the passage of the French troops.

On the plateau above the river, almost within range of the guns of the ships, awaiting the attack, was drawn up a strong body of cavalry, infantry, and artillery. Whilst his column was halting, awaiting the advance of the English, General Bosquet, at the head of his staff, had carefully reconnoitred the enemy's position, and had examined the nature of the ground which they occupied. When his division resumed its march, he detached from it a regiment of Zouaves, and a body of tirailleurs, who, concealed by the trees and bushes, reached unperceived the river, about a mile from its mouth. Suddenly they emerged from the brushwood on the opposite side of the stream, and were soon swarming like ants up the almost perpendicular face of the cliffs. With extraordinary activity and undaunted courage they struggled onwards, and gained the summit. The Cossacks, intently watching the movements of the division which threatened the Russian left, had not perceived this skilful manœuvre. Suddenly seeing the enemy in their rear, they turned their horses, and precipitately galloped back towards their centre; the infantry and artillery quickly followed. The Zouaves, as one by one they reached the plateau, fell into line, partly protected by an artificial tumulus which crowned this part of the heights. But the few who first succeeded in gaining
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the summit had scarcely time to collect and form before the Russians opened a deadly fire of musketry and artillery upon them. General Bosquet now hastened onwards the remainder of his division, and, crossing the mouth of the Alma, hurried to their support. The main body of the French, under Prince Napoleon and General Canrobert, at the same time rapidly advanced through the village of Alinatomak, and, fording the river, gained a pathway which led up to the plateau. It was only by extraordinary exertions that the artillery, drawn by relays of horses, could be dragged up these precipitous tracks, now crowded with troops struggling forward in disorder to the attack. A battery belonging to General Bosquet's division was the first to gain the heights. Bravely led, it rapidly advanced to the assistance of the Zouaves, and sustained for some time, but with great loss, an unequal contest with two Russian batteries of heavier guns. At this moment the issue of the day depended upon the courage and steadiness of the Zouaves, and the few troops that had joined their diminished ranks. Had they given way, they would have been driven back upon the ascending columns, which would have been thrown into the most fatal disorder; but they nobly held their ground. General Bosquet, with admirable skill, forming into line such part of his division as had reached the heights broken by the confusion which had occurred in mounting by the narrow pathway, led them against the enemy. Some regiments of the line having attempted to force the Russian position to the left of the Zouaves were received as they emerged on the plateau by so hot a fire that they fell back, and for a moment sought protection beneath the edge of the cliff, whilst their skirmishers, concealing themselves behind the irregularities of the soil, and in the small ravines, poured a continuous volley into the enemy. The main body of the Russians was collected round an artificial tumulus, upon which stood a half-built octagon tower. Thus partly protected, they maintained their ground. To dislodge them, the Zouaves, who had now formed in considerable force, accompanied by some regiments of the line, charged with the bayonet. Lieutenant Poitevin and a serjeant of the Zouaves reached the unfinished building, and both, as they triumphantly raised the French flag upon it, fell covered with wounds. It is a curious characteristic of these brave but eccentric troops that the Zouave had a monkey upon his shoulder, which, dying, he bequeathed to his company, and which has since shared all their dangers. The Russians fiercely contested the vantage-ground; and here took place the deadliest struggle between the French and the enemy. Around and within the unfinished tower were heaped the dead and the dying;

dying; but the Russians at length gave way before repeated and impetuous charges, and again fell back.

Prince Menschikoff, seeing that his left was about to be turned, detached from his centre a considerable body of infantry and artillery to its support. The main body of the French army were now rapidly gaining the heights, and their heavy artillery had opened upon the enemy with great effect. A body of marines, under the brave Colonel du Chateau, boldly pushed up the declivity forming the western extremity of the amphitheatre, where the English and French lines came into contact. The Russians perceiving that the position was now carried, and fearing lest they should be outflanked, hastily withdrew the battery of heavy guns which we have described as commanding the western slopes of the amphitheatre, and which at the same time enfiladed the earthwork, subsequently so hotly contested with the British.

Nearly up to this time the British troops had remained immovable. Partly concealed from the enemy by the smoke of the burning village and the trees on the river bank, they halted, as had been agreed, waiting until the French had gained the heights and had turned the Russian left. Marshal St. Arnaud, however, perceiving that fresh columns of infantry and batteries of heavy artillery were being brought against him, and fearing to be overpowered by a vast superiority of numbers, sent the most urgent requests to Lord Raglan to advance without further delay. 'We are massacred,' declared his aides-de-camp, in the somewhat exaggerated language peculiar to our allies. The moment appeared critical. Regardless of the overwhelming masses of artillery in front, and no longer adhering to the original plan, the British commander gave the order to move forward. Suddenly the batteries on the slope, which had hitherto remained silent, poured forth their deadly fire. The marksmen behind the walls and in the vineyards opened at the same time upon the approaching lines, but were soon driven over the river by our rifles. For a short time the British troops were lost in the smoke of the burning village; but suddenly their artillery responded to the enemy. Keeping up a well-directed fire, they inflicted considerable loss upon the Russians, and blew up a tumbril in the left battery on the slopes. Partly under cover of their fire, Lord Raglan, at the head of his staff, plunged into the ford, and amidst a shower of shot and shell gained untouched the opposite bank, near the extreme left of the French. The light division, the first to attack, had formed in line, but was soon broken by the irregular ground and the burning village through which it had to advance. More than once the men had to lie down to
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take shelter for a moment from the heavy fire of the Russian batteries. They crossed the stream in disorder, and were not allowed to form under the shelter of the opposite bank; but led and urged on by Sir George Brown, the 7th, 23rd, and 33rd Regiments, General Codrington's brigade, rushed up the slope in the teeth of the heavy guns placed in the earthwork. With unparalleled courage they drove the enemy before them, and in spite of repeated volleys of grape, which mowed down their ranks, made their way to the cannon's mouth. Some actually leaped into the battery; but were soon compelled to desert it by the heavy fire of the Russian battalions which swept the slopes behind it. A column of the enemy descending the hill was mistaken for the French, and for a moment our troops ceased firing. It soon declared itself by opening a volley upon the remains of the three regiments, which wavered and fell back, mingling together in complete disorder. The Russians, encouraged by this success, sprang over the earthen parapet, and with the bayonet rushed down the declivity upon the retreating crowd. For an instant the issue of this terrible contest seemed doubtful. The brigade of Guards was advancing in support of the Light Division, and an order was now given to it to retreat. The second brigade of the Light Division was inadvertently formed into a square under the heavy fire. At this most critical moment Sir Colin Campbell, who had on more than one hard-fought field earned his experience and reputation as a commander, and to whom fame had already assigned the victorious issue of one great battle, urged the immediate advance of the Guards and of the brigade formed into square. The advice was fortunately followed, and the Guards again moved with steady step and irresistible courage up the steep ascent.

Sir Colin himself leading his gallant Highland brigade (the 42nd, 79th, and 93rd Regiments) next made that flank movement which decided this part of the battle. The bagpipes sent forth their shrill notes, and the long line moved on with the slow and measured step of an ordinary parade. The calm and determined fashion of their advance, and the strangeness of their costume, appear to have struck terror into the enemy. They reached, with comparatively small loss, the right flank of the redoubt, and at the same time the Guards advanced with equal determination up the slope. Volleys of grape and musketry were opened upon them, but they did not return the enemy's fire until within a hundred yards, when, after discharging their pieces with terrible effect, they rushed with the bayonet upon the redoubt. The Russians recoiled before the charge, and seeing the Highland brigade on their flank they hastily abandoned the earthwork, leaving, however,

two

two guns as trophies in our hands. A short struggle took place, and the Guards remained the victors amidst a heap of slain.

Meanwhile the Second Division, gallantly led by their veteran general, Sir De Lacy Evans, had steadily advanced on the western side of the amphitheatre, notwithstanding the galling fire from the earthwork and flanking field-batteries. It reached the middle of the slope as the redoubt was carried; and one of its brigades, under General Pennefather, formed into line with the victorious Guards. With fresh ardour they again pressed forward. The two massive squares of Russian infantry still remained unshaken on the high ground above them, and seemed to present an immovable barrier against our almost exhausted troops. Lord Raglan saw the impending danger, and by his orders two guns from Captain Turner's battery were speedily brought to a commanding ridge near which he stood. The shot ploughed through the dense ranks. They soon began to waver, and in a few moments more they were scattered far and wide over the hill side. The second mass soon followed, giving way before the advancing Highlanders, but retreating in better order. The Russian commanders made one more attempt to rally their flying troops, and a mounted officer was seen bravely leading back a heavy column to the charge. But it gave way before it reached the British line, now steadily ascending the slope, and was thrown back upon the retreating army.

The Russian reserves on the right made a last effort by suddenly moving on our flank to check the progress of the Highlanders and to dispute with them the crest of the hill; but in vain. A regiment faced to receive them, and a single steady and well-directed volley sent them back in disorder. The French had driven the enemy from every part of the heights to the right. A deep valley, running up far inland from the sea, prevented the Russian left retiring without making a considerable circuit and mingling with the centre, thus adding to the disorder. The French batteries opened relentlessly upon the flying masses. A scene of terrible confusion—a complete rout rather than a retreat—now ensued; the Russian soldiers throwing away their arms, their boots, their knapsacks, and all that might impede them, left their ranks and sought safety in flight; the British Horse Artillery followed, pouring into them, again and again as it came within range, its murderous fire. In vain the Russian cavalry, which had taken little or no part in the battle, attempted to check the pursuit: they could but cover the retreat of the panic-stricken crowd. But our artillery being unsupported was soon compelled to return, and about four o'clock the last gun re-echoed in the distance. In three hours—during two of which
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only the British had been engaged--the allied armies had carried, by their irresistible courage and daring, a position which might well have been deemed impregnable!

The enemy was permitted to retire unmolested, although the 3rd and 4th divisions of the British army, drawn up during the action as a reserve on the right bank of the Alma, had not been under fire, and the 4th division, and two brigades of the French, with the whole of the Turkish contingent, had taken no part in the battle. The reasons assigned for not continuing the pursuit were, the want of cavalry—a want undoubtedly much felt,—the exhausted state of the men—which could only apply to those who had been engaged,—and the late hour of the day—to be attributed to the delay which had unfortunately taken place in our movements in the morning. Some of the most distinguished officers in both armies were, it is understood, in favour of an immediate pursuit, and it is the more to be regretted that their advice was not adopted, as such was the panic in the Russian army, that on the night after the battle, a false alarm having been spread that we were advancing, they precipitately fled from the Katsha, where they had bivouacked, leaving their guns behind them. Their dread did not cease until they were within the walls of Sebastopol. Even on the Belbec ammunition-wagons were found abandoned on the road. It is impossible to say what might have been the result if the allies had followed up their success—perhaps the total destruction of the Russian army and the capture of the stronghold which now defies us.

The loss of the Russians is believed to have been little less than 8000 men, whilst amongst nearly 900 prisoners were 2 generals of brigade; that of the allies amounted to 619 killed and 2840 wounded. The British lost 362 killed and 1640 wounded. Attacking the centre of a position of great strength, and led up in front of a redoubt armed with artillery of a calibre rarely seen in the field, they suffered far more than their allies. It was in advance of and within this earthwork, that the fiercest struggle of the day, which was marked by deeds of heroic valour, took place; it was before it that three British regiments were nearly destroyed; and it was above and below it that there lay a heap of dead and wounded—a mingled mass of English and Russians—which perhaps had never been beheld by the oldest warrior within so small a space. The whole Russian force engaged appears, according to the statement of one of their generals, to have amounted to 33,000 infantry, 5000 cavalry, about 2000 marines, and 100 guns; the allied armies numbered about 50,000 men, though less than 30,000 took part in the battle.

The distant sounds of artillery had scarcely ceased before the
French

French began to care for and remove their wounded ; ere night fell none remained on the field. They were taken away on seats and beds slung upon the backs of mules, or, when too severely injured to bear the motion, upon litters carried by men. Officers of all grades aided in the discharge of this sacred duty ; nor did General Canrobert, although himself wounded, neglect it. The priests attached to the army ministered to the dying. It is too well known how the English wounded fared on that night. There were but scanty means of moving them from the place where they had fallen. For the most part they remained on the field exposed to the heavy dew and the cold air, with such slight covering and food as a charitable hand might bestow. Some there were who passed two long nights in agony on the cold ground. From one small group of English and Russians, a serjeant, whose leg was broken, dragged himself to the river's edge to fetch water for his suffering companions. Those who were thus left helpless had still to fear another enemy—the marauders who after nightfall prowled amidst the dead, and who, for the sake of plunder, rarely spared the living. The bandsmen, it is true, were employed to carry the wounded to huts which had been assigned to them in the village, but their numbers were totally inadequate to the services required. It was, moreover, disgraceful that the soldier should depend upon such means alone, for his comfort and even life after he had nobly shed his blood for his country. May not the larger number of deaths in the British army, as compared to that in the French, be partly attributed to this neglect?

Thus British and French troops had been brought face to face with those of Russia. The battle of the Alma first taught us the inferiority of the enemy's infantry and cavalry, and the efficiency of his artillery—a result which all subsequent experience has tended to confirm. A Russian general, who was taken prisoner, attributed the loss of the day chiefly to the misconduct of the cavalry, and on no future occasion has this arm retrieved its character. The infantry could not stand against the determined valour and steady advance of the English troops, nor the impetuous charges of the French, and when once broken it could no longer be rallied. The Russian regiments engaged differed much in their appearance and conduct. Those recently brought from the Principalities, which they had only quitted in the middle of the previous month, and from the centre of Russia, were large and able-bodied men ; whilst those from the Crimea and Circassia were wretched in appearance—ill fed and ill clothed. The artillery was admirably served and fired with rapidity and precision, but the gunners drove off their guns too quickly—an error which

which they have committed throughout the campaign, and which may be attributed to their knowledge of the great importance attached by the Emperor to the loss of a gun. The Russian infantry only fight with confidence when under cover of a powerful body of artillery.

The position of the Russians, very strong by nature, was but ill defended. Placing too much confidence upon the precipitous nature of the ground, and not as yet aware of the daring and activity of the African troops of our allies, Prince Menschikoff had not sufficiently protected his left flank. It was mainly owing to this neglect that his position was so soon forced, and that his centre, threatened by the unexpected appearance of the French in their rear, abandoned their batteries and retired to the crest of the hill. The advance of the British troops up the slope in the teeth of the heavily armed battery, which swept it on all sides, has been much criticised. The leading up of the brigade of the light division, before it was formed, was undoubtedly a grave error, which entailed a severe loss upon three regiments. The attempt to storm this strong redoubt at all must be attributed to the urgent messages of the French Commander-in-Chief, whose known character for exaggeration might have justified some hesitation before the original plan of attack was completely abandoned. The undaunted courage and steadiness with which the British troops performed their perilous duty was the admiration of the French, and fully established that reputation amongst their allies, which every subsequent engagement has only tended to confirm. No troops in the world could have behaved with a more noble devotion. It has been well remarked that at the Alma each army had fortunately assigned to it that share in the battle which best suited its peculiar qualities. Whilst British calmness, endurance, and courage were eminently displayed in the attack upon the Russian centre, the activity, intelligence, and valour of our allies were no less conspicuous in the ascent of the almost perpendicular cliffs in the face of an enemy, and in the undaunted spirit with which they formed into line, one by one on the heights, under a heavy fire—the Zouaves well nigh deserving the eulogium passed upon them by the French Commander-in-Chief, ‘that they were the first soldiers in the world.’ *

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* As considerable misapprehension appears to prevail as to what the Zouaves really are, we may observe that these regiments originally consisted of Arab natives of Algeria, and were so called after an Arab tribe. They were afterwards disbanded and reconstituted; only Frenchmen, with a very few exceptions, being admitted into their ranks. Native regiments were then formed under the name of ‘Indigènes,’ or ‘Turcos.’ The Zouaves are notorious for their activity and courage, and at the same time for their propensity to plunder—a habit easily contracted

The allied armies were detained for two days on the Alma after the battle. Marshal St. Arnaud proposed to advance on the 22nd; but the British dead were still unburied, and the wounded as yet not moved to the ships. It was only late on the second day that they had all been brought to the seashore, through the unparalleled exertion of the officers and seamen of the inshore squadron. By suspending a hammock to an oar, four men could carry, though not without much fatigue, a wounded soldier to the boats ready to receive him on the beach. The French, too, lent us their mules, and gave us that hearty and generous assistance which they have ever been ready to afford. Many disabled Russians were also placed on board ship; but about 700 were left behind, for the time, under the charge of Dr. Thomson, whose heroic conduct has secured to his memory a well-deserved fame.

On the 23rd the allied armies commenced their onward march. Disease had unfortunately again shown itself in the British ranks. The cholera had broken out afresh, much aggravated, it is believed, by the 4th division having been allowed to bivouack upon the ground which Russian troops had just left, and which was covered with decayed and offensive matter, besides teeming with loathsome vermin. There is no officer more needed in our army than one, either a military or a medical man, whose special business it should be to see to the sanitary condition of the camp. Owing to the want of the commonest precautions, and of some one person to look to such matters, offal, dead horses, and every kind of noisome matter are permitted to accumulate close to our tents. The air becomes tainted, and disease soon spreads through the camp.

Lord Raglan desired to march in one day to the Belbec; but Marshal St. Arnaud now objected. The armies, therefore, halted on the Katsha, and on the following day (the 24th) encamped on the left bank of the Belbec.

The original intention of the commanders of the allied armies had been to invest and attack the forts which protect Sebastopol on the north. The town, with its arsenal, its dockyards, and its storehouses, stands on the southern side of a deep inlet, whilst on the opposite side are only the large stone forts and batteries which defend the entrance and interior of the harbour. These massive edifices are erected upon the water's

contracted in an African campaign. They chiefly consist of men who, having served their prescribed five years in the army, have no desire to leave it, but prefer the perils and excitement of a military life, and of various other adventurous spirits who love war better than peace. It requires the strictest discipline to keep them under control, and to place some check upon their natural propensities. They wear a loose Oriental dress, with fez and turban, both becoming and convenient.

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edge. Behind them the ground rises into a ridge of no great height, but commanding the inlet and town on one side and descending on the other in a long gentle slope to the Belbec. The coast to the north of Fort Constantine, which is at the very mouth of the harbour, consists of a cliff of earth, about 100 feet high. On the summit of this ridge the Russians had recently constructed a considerable fort, known to our engineers as the Star Fort, or Severnaia, which, from its position, commands both the town and the Belbec. On the cliff, not far to the north of Fort Constantine, is the Telegraph Battery; beyond it, in a line with the Star Fort, and connected with it by covered ways and embankments, is a square stone tower, surrounded by earthworks, and mounting eight heavy guns *en barbette*, that is, placed on the summit without embrasures, and working on pivots, so as to be turned in every direction upon an enemy. On account of its mischievous qualities, it has been named 'the Wasp Battery' by the seamen of the fleet. From the weight of metal thrown by its guns, their long range, and their plunging fire, it has caused more injury to our vessels, and has more embarrassed their movements, than any other battery erected by the enemy. Such, with one or two unfinished earthworks in front of the Star Fort, were the defences on the northern side of Sebastopol when the allied armies crossed the Belbec. Since that time other works, chiefly earth-batteries, have been erected on the sea face, on the slope between the Belbec and the Star Fort, between that fort and the harbour, and to the east of it nearly as far as the Inkermann Valley.

It was on the Belbec that the commanders of the allied forces determined upon the now celebrated flank march. The reasons in its favour appear to have been the following:—Marshal St. Arnaud declared that his troops could not encamp on the left bank of the Belbec so as to be in a position to open regular approaches, without being exposed to the fire of the Russian batteries which commanded the river. For similar reasons the fleet would have had to remain off the Katsna, and to disembark on an exposed coast the stores and siege train. Unfavourable weather might at any time prevent communication with the ships, and the distance was too considerable between the point of disembarkation and the lines of the besieging army—the road, which we had no available force whatever to protect, being at the same time exposed to the attack of an army in our rear. On the opposite side of Sebastopol comparatively safe harbours and anchorage were to be found, in the deep inlet of Balaklava on the southern coast, and in those bays which indent Cape Chersonese. Moreover, it was anticipated that the Russians would be unprepared to receive an enemy in that quarter, and that it would be possible

sible to take the town at once by a *coup de main*. At the same time, should an immediate assault be deemed unadvisable, the nature of the country was such as to afford the allies a secure position easily defended against a flank attack. On the other hand, arguments were not wanting in favour of commencing the siege on the northern side. With the co-operation of the fleet, the Star Fort, the only really formidable obstacle, would have been speedily taken by regular approaches; and, when once in our hands, would enable us to command the town and defences on the opposite side of the harbour, whilst we could have interrupted the approach of convoys and reinforcements by the high road from Odessa. The objections to the southern side were that no check whatever could there be placed on the relief and provisioning of the place, and that, even presuming the town and its defences to have fallen into our possession, we were still commanded by the ships of the fleet, the Star Fort, and any batteries erected on the northern side. The reason, we believe, which finally determined the flank march was that insisted upon by Marshal St. Arnaud—the inability of his army from its exposed position to undertake the siege.

The truth is that we had not sufficient troops to render either plan feasible. We could not carry on the siege of the Star Fort and at the same time protect our rear against the reinforcements which were then rapidly approaching; nor had we men enough to engage in a regular siege of a town which we could not even invest. Only one thing could justify our landing without a reserve and sufficient means for besieging a great fortress—the possibility of taking Sebastopol by surprise. That opportunity once lost, we were in a terrible dilemma. We had attempted the siege of a stronghold of enormous strength and inexhaustible resources with an army scarcely supplied with the materials necessary for a siege of any duration, immensely inferior to the forces which could be collected on its flank, utterly incapable not only of investing the place, but even of throwing the slightest obstacle in the way of communication between the besieged and the open country, and without any reserve to supply inevitable losses by battle and disease. The sequel will show the penalty we have paid for thus blindly entering upon so vast an undertaking and without sufficient appreciation of the difficulties we should have to encounter.*

It may be observed that this sudden change* of the base of our

* Since these remarks were written we find that Sir Howard Douglas, in the Appendix to the new edition of his valuable work on Naval Gunnery, has taken the same view as ourselves. His high authority upon all such matters gives great weight to his comments upon the expedition to the Crimea.

operations could only have been effected whilst a steam fleet was off the coast, and could re-open its communications with the army as soon as it had appeared on the opposite side of Sebastopol. This daring measure has demonstrated one of the many immense advantages which steam confers upon an invading force.

The flank march having been resolved upon was executed with considerable skill, and with that determined spirit which is so characteristic of British troops. It was a bold and hazardous undertaking. The country was difficult and unknown. Thick woods, deep ravines, and precipitous hills, only crossed by mountain tracks, were to be traversed by the army. Had the enemy learnt our intentions, we might have been exposed to the most fatal disaster. As is well known, our advanced guard fell in with the rear of a strong Russian force which was panic-stricken by the unexpected encounter. Had our cavalry been present, a complete rout must have ensued. But we were no less surprised than the enemy. It was Lord Raglan with his staff who, emerging from a thick wood, first found that he was close to a battery of Russian guns. Fortunately Captain Maude was there with his troop of horse-artillery. A few rounds drove the protecting escort from the baggage, which became the spoil of our soldiers. A general officer—perhaps Prince Menschikoff himself—was observed to threaten from the windows of his carriage with personal violence his coachman, who vainly urged his horses through the flying crowd. The narrow road was so encumbered with carts, tumbrils, men, and animals, that had an active trooper made a dash at the foremost waggon and cut the traces of the horses, a large number of guns would inevitably have fallen into our hands.

We had fallen in with the rear of Prince Menschikoff's army, which, after the battle of the Alma, had retired to the south of Sebastopol, and had probably occupied the valley of the T'chernaiia and part of the heights now held by our troops. The Prince was withdrawing to Simpheropol, and the explanation he has since given of his object, at that time misunderstood, is undoubtedly the true one. From the very beginning he appears to have overrated the forces of the allies. He believed, as was natural enough, that we should besiege Star Fort, and that we were in sufficient strength to interrupt the reinforcements and supplies which he was daily expecting from the north. He reckoned upon reaching Simpheropol, as we had reckoned upon reaching Balaklava, unperceived, and from thence, when sufficiently strengthened, threatening our rear and compelling us to raise the siege. The plan was neither ill-devised nor ill-executed.

executed. Our movement, as it has proved, was more successful, and has probably saved our army from utter destruction.

Early on the morning of the 26th of September the British army defiled across the valley of the Tchernaiia and arrived at the entrance of that of Balaklava. Sir Edmund Lyons, apprised of its arrival on the banks of that river, had left his anchorage off the Katsha, and, followed by a portion of the in-shore squadron and by a few transports containing the siege-train and necessary provisions for the troops, had brought the *Agamemnon* to the southern coast. The land, which ends at Cape Chersonese in a long low spit, rises rapidly to the south into bold and precipitous rocks, whose summits are covered with wood. A narrow rift leads into the harbour of Balaklava. Overhanging the sea are the ruined walls and towers of an ancient Genoese castle. The harbour itself, somewhat difficult of access for large vessels, owing to an abrupt turn at the entrance, resembles a deep mountain loch. It is surrounded by high and rugged hills. Upon their very foot on the eastern side of this singular inlet stands the town, inhabited by Greeks, the descendants of a colony of comparatively recent date, which enjoys, with several similar communities in the Crimea, peculiar privileges under the Russian government. As the *Agamemnon* appeared before the mouth of the harbour a crowd of men, women, and children were seen flying over the hills. The garrison, consisting of a small body of Greek troops, natives of the place, took refuge in the ruins, and with four small mortars and a few wall-pieces prepared to make a vigorous defence. As Lord Raglan and his staff appeared at the entrance of the small valley leading to the town, a warm fire was opened upon him. But a party of rifles and a troop of horse-artillery having reached the ridge of a hill commanding the ruins, and the *Agamemnon* having fired a few shots, the enemy was soon induced to show a flag of surrender. The town was then occupied by our troops.

During the march from the Balbec, Marshal St. Arnaud, overcome by illness, and by long and acute suffering, resigned the command of the French army to General Canrobert, and died a few days after, on his passage to Constantinople. His loss was not much felt by the allied armies. Possessing many rare and remarkable military qualities, it is doubtful whether he was fit to command a large army, or to carry on a campaign against a powerful European enemy. His courage, energy, and indomitable will were the sources of his rapid rise, and bore him through his extraordinary career. They were eminently displayed during the short period of his command in the Crimea. When struggling with death itself he braved, with equal fortitude

in the council and in the field, the most terrible tortures ; but he was deficient in the still higher qualities of a great commander ; and whilst his vanity gave him confidence in himself, he never inspired it in others. He died in time to leave untouched a reputation chiefly founded upon an act of singular daring, for the successful execution of which he was, perhaps, above all other men peculiarly qualified.

A new, and to a certain extent a sure, base of operations had been secured for the allied armies. During the following day the French and English battalions took up their positions on the heights above Sebastopol, and in the valley to the north of Balaklava. Had the French still kept their original station on our right, they would, now that we had faced round, have been inland ; but as General Canrobert was desirous that his troops should rest on the sea, the English still maintained the place of danger and of honour. As the harbour of Balaklava was too small for the disembarkation of the supplies and siege-train for the two armies, the French chose for that purpose Kamish Bay, a deep inlet in Cape Chersonese, more spacious and convenient than that of Balaklava, but completely exposed to northerly winds. A heavy sea setting into it would cause great damage to the shipping collected there.

Early on the morning of the 27th, Sir Edmund Lyons, amidst the enthusiastic cheers of those who had assembled to welcome one whose presence at all times inspired confidence and hope, brought the *Agamemnon* with admirable skill through the narrow entrance, and round the abrupt turn, into the harbour. She was followed during the day by several transports and vessels of war.

No time was lost before ascending the heights and reconnoitring Sebastopol. It was found that scarcely any preparations whatever had been made on the south side to receive an enemy. One round tower of stone, of moderate dimensions, armed with heavy guns *en barbette*, flanked the approach of the town, from the end of the harbour to the dockyard creek. A second swept the country from this creek to the sea. On the shore was the Quarantine Fort, and a wall partly protected the town to the west. With these exceptions there were on the land side neither wall, ditch, battery, nor other defence. So completely had the inhabitants of the place been taken by surprise that they had scarcely time to escape by a precipitate flight from their country-houses. The town was already filled with the inhabitants of the surrounding villages, who had been driven in by the Russian troops.

On the appearance of the allied armies on the heights a panic prevailed

prevailed in Sebastopol. Steamers and boats of every description were seen coming to and fro in the harbour; long lines of carts, carriages, ladies on horseback, and a crowd of persons on foot, were observed hurrying along the road leading into the interior. Property of every kind appears to have been removed from the town. Almost every deserter and prisoner who has since fallen into our hands declares that, had the allies at once entered the place, little or no defence would have been attempted, and that the inhabitants were utterly at a loss to account for our inaction. Sir John Burgoyne, it is believed, was of opinion that the place should be summoned to surrender, and that, in case of refusal, we should be justified in at once proceeding to the assault. Several of the ablest and most experienced officers in the British army (amongst whom may be mentioned the late Sir George Cathcart) and, we understand, in the French army also, thought that a *coup-de-main* would be successful, and would be attended by comparatively small loss. The reasons assigned against this summary proceeding were, that it was inconsistent with humanity thus to treat a town which was filled with women and children; that to assault a place which would fall by a regular siege could never be justified in case the attempt should end in a reverse or a disaster; and that if we even took possession of the southern part of the town, we could not hold it for any length of time, under the guns from the opposite forts, and from the ships. Such reasons appear to us, we confess, to be inconsistent with the state, resources, and numbers of the allied armies, and with the time and mode in which we had entered upon this campaign. Had they been valid, it was more than mere error and want of foresight to throw an army into the Crimea without a reserve or the means of carrying on a protracted siege; for it was only the possibility of taking the place by a *coup-de-main*, as we have already observed, which could justify the expedition.

It was not until the 5th October, ten days after the forced march, that Captain Staunton, of the Engineers, was sent to examine the ground, with a view to making a line of defences on the side of Balaklava, and in two days more the earthworks were commenced. The enemy first appeared in force on our flank on the 7th October, and did not then persevere in the attack. A body of infantry, cavalry, and artillery, on that day crossed the Tchernaiia, and appeared in the valley to the north of Balaklava. About 1500 Cossacks advanced beyond the rest of the detachment, and approached our lines. It is believed that they might have been completely cut off, had our light cavalry been well directed. At least a general impression to that effect prevailed

prevailed in the English army, and caused that feeling to which may partly be attributed the fatal charge of the light brigade on the 25th. Maude's troop of horse-artillery again distinguished itself on this occasion. The enemy having suffered some loss, but having captured three of our dragoons, retired in confusion, many Russians throwing away their arms and accoutrements to facilitate their flight. It was only on the 12th October that the first works intended for the defence of Balaklava were completed. Sir Colin Campbell having been named to the command of this important position, encamped at the entrance to the small valley with the 93rd Highlanders. About 3000 Turkish troops, chiefly Tunisians, who had newly arrived, were added to this small force. Some were placed in the redoubts; and the heights above the harbour were confided to about 1500 marines and sailors.

The French, with their usual forethought and energy, had on their arrival at once commenced throwing up redoubts and earthworks along the heights, extending from the Woronzoff road to the rear of their position. The upper part of that road, near the Telegraph Station, was commanded by a strong redoubt. Below it a considerable earthwork, armed with field-pieces, swept the sides of the hill and the valley beneath. Three large redoubts commanded the road from Balaklava to the camp and the rear of the French lines. These defences were entrusted to the 'corps d'observation,' under General Bosquet, consisting of regiments of the line, Zouaves, Indigènes, and a considerable body of Turks. Between the Woronzoff road and the edge of the hills overlooking the end of the harbour, the heights were held by the first and second divisions of British troops, and no steps were taken to protect them from a sudden attack of the enemy.

By a reference to the accompanying plan* it will be perceived that the allies are in possession of a high plateau, the eastern sides of which, from the end of the harbour of Sebastopol to the sea, rise abruptly, almost precipitously, from the valley. To the north it slopes gradually to Sebastopol, the hill-side being cut up into deep ravines, which run far inland and divide the heights into several distinct parts. It must be borne in mind that the camps of all the divisions, except a part of the 4th, are concealed from the town by high ground in front of them. To the west the plateau subsides rapidly into the low land which forms Cape Chersonese. Whilst the English batteries command Sebastopol,

* This plan has been reduced from one surveyed and engraved by the French Government, and gives with accuracy the position of the allied armies, and the nature of the surrounding country; those hitherto published in England are very incorrect.

and are at a very considerable elevation above it, those of the French are for the most part on a level with the Russian works. It is evident that had we the heights alone to defend, our position, if properly protected, would be one of extraordinary strength—indeed impregnable. Their sides towards the valley of the Tchernaiia are so precipitous, in some places forming cliffs, that no enemy could force them in the face of British and French troops. The roads which lead up to them could, without difficulty, be rendered impassable. Unfortunately the necessity of holding the harbour of Balaklava compelled the allies to leave the heights, to descend into the plain, and to extend their line so as to command all the points of attack upon that important position. The first line of defence was traced upon a low ridge, or undulation, which divides the valley in front of Balaklava into two distinct parts, leaving the foot of the cliffs, near the point where the road from the town leads up to the heights, and joining the wooded mountains beneath the village of Kamara. Four isolated redoubts were built upon this ridge. About a mile in their rear were the Highlanders, and to the right of and behind this regiment the Turks. On the hills above Balaklava were a few scattered earthworks, held by the marines and sailors. This line of defence, it is evident, was far too extensive to be adequately defended by the few troops which could be spared from the siege, and thus offered a weak point exposed to the attack of the enemy. We may observe that no attempt whatever had been made to interrupt the communication between the open country and the town, by the Tchernaiia or Inkermann valley, although the road might have been completely commanded by a battery on the overhanging heights.

On the 7th October a council of war was held at the headquarters of the British army, to determine upon the nature of the operations to be undertaken against the place. Up to this time nothing had been done, except that by the unceasing exertions of the officers and seamen of the squadron, under the command of Sir E. Lyons, the greater part of the siege train had been disembarked, and was ready to be placed in battery. At this council of war Sir John Burgoyne is understood to have submitted a plan of attack, which was summarily rejected by all the generals present as utterly impracticable. The army, therefore, still remained without any precise scheme of operations. It was subsequently resolved that the French should undertake the real attack on the extreme left, between the sea and Dock-yard Creek, whilst our batteries should be erected at a sufficient distance to keep down the fire of the enemy, without any intention of advancing them, for the present, nearer to the town. This determination was chiefly
owing

owing to the nature of the ground respectively held by the two armies. The space in front of the French lines permitted the usual process of sapping and trenching to be carried on, while the position occupied by the British was too rocky to admit easily of such works, and was broken by so many ravines that regular approaches were almost impossible. This decision having been come to, the command was given for breaking ground, and directions were issued in general orders for the conduct of the troops to be employed in digging and defending the trenches.

Notwithstanding the result of the council of war, our works proceeded but slowly, and were interrupted for twenty-four hours, the engineers not having been able to find by night the battery they had traced by day. But could it be otherwise? Our engineers had no detailed plan of our projected and finished works and those of the enemy. In these matters we afford a striking contrast to our allies. Their admirably organised department of engineers had constructed a map, upon a large scale, of the ground and the siege operations. In this map were daily noted all additions made to the works, and the observations of officers constantly occupied in examining our position, the town, and the Russian defences. Almost every building of note in Sebastopol had received its name, arbitrary of course, but of considerable importance in transmitting orders to those employed in the attack. Each officer in command of troops was furnished with a tracing of that part of the map which included the trenches in which he was posted. He could not then lose his way and fall into the enemy's hands, an accident which more than once happened to our working parties.

By the time the English batteries were completed, exactly three weeks had elapsed since the allied armies had taken possession of the heights. There were four distinct works. That to the extreme left of the British position contained forty-six guns and mortars, and was generally known as 'the left attack,' or 'Chapman's battery,' from the engineer who superintended its construction. It was partly held by the Royal Artillery and partly by seamen, under Captain Lushington, of the *Albion*, who worked the guns taken out of the men-of-war. To the east of it, and nearly in the same line, was a second, known as 'the right attack,' or 'Gordon's battery,' mounting twenty-one guns, worked by the Royal Artillery under Colonel Dickson, and by seamen chiefly from the *Diamond* frigate, under Captain Peel. Beyond and facing the round tower was 'the five-gun battery,' containing a Lancaster gun and four heavy 68-pounders, taken from the *Terrible*, and worked by seamen. None of these batteries were nearer than 1300 yards to the Russian lines, the average distance

distance being about 1500. The fourth battery held one Lancaster gun, and was placed in an isolated position behind Gordon's battery, at above 2000 yards from the nearest works of the enemy. Such were the number of our batteries and guns on the 16th October. At a subsequent period the two Lancasters and the four 68-pounders having been withdrawn from their original positions, were added to the right and left attacks, and additional works were constructed. The French, we believe, had at first fewer guns in position, but their works were nearer than ours to the Russian lines.

In the meanwhile the Russians had been making unparalleled exertions to redeem the error they had committed in neglecting to defend the southern part of the town. Men, women, and children were observed working in crowds night and day, bearing earth, gabions, and fascines. The round tower at the extreme left was speedily surrounded by substantial earthworks, the tower itself, originally white, having been painted of the colour of the earth to render it a less conspicuous object. To the right of, and connected with it by a line of works, was constructed a formidable redoubt of considerable size, known as 'the redan.' Between the 'redan' and the arsenal, at the head of Dockyard Creek, were the 'barrack batteries,' so named from some large buildings behind them. To the west of the creek, facing the French lines, was 'the garden battery,' thus called from its position near a summer-house. Subsequently other batteries were raised between it and the creek. Beyond it was 'the flagstaff battery' (*batterie du mât*), united by a line of strong defences and by a wall to the Quarantine Fort and the sea. All these works had been commenced since the allied armies had encamped upon the heights. Every day fresh earthworks were thrown up and additional guns of heavy calibre placed in position. Whilst thus engaged, the enemy continually threw shot and shell into our camp, part of which was within range, and subsequently at our working parties. But in comparison with the number of rounds fired, estimated at no less than 25,000 before our batteries opened, the allies suffered but an insignificant loss.

As yet we had permitted the enemy to labour at their defences without interruption or molestation. When the extensive and solid nature of the new works was pointed out to the chief British engineer, he is said to have replied, 'that they were only built to be knocked down again.' But there were not wanting those who believed that works of earth would prove more formidable than those of stone, and who shook their heads

as they saw fresh batteries, bristling with heavy guns, rising from day to day before them.

The long-wished for orders for the attack were at length given. The French and English batteries were to open their fire together at half past six o'clock on the morning of the 17th October, the signal being three rockets thrown up from the French lines. At a council of war it had been agreed that the allied fleets should make a simultaneous attack. To insure the co-operation of the British fleet, Colonel Steele, the military secretary of Lord Raglan, was sent to Admiral Dundas to apprise him of the decision of the Commander-in-Chief.

During the night of the 16th, the embrasures of the batteries, which had been previously concealed, were uncovered. In the uncertain light of dawn, the Russians already saw by this sign that the struggle was about to begin. They did not await it, but at once opened a terrible fire. No response was made to the challenge. A solemn stillness reigned through the lines of the allies. Thousands looked with throbbing hearts for the appointed signal. As the sun rose in the cloudless sky, three white streaks were seen above the French camp. Suddenly one long line of white smoke burst from the hill side, which, hitherto silent, now re-echoed the roar of artillery. Not a breath stirred the air, and a dense cloud soon hid the town and harbour of Sebastopol. As the light morning breeze arose and drew aside the curtain, every eye was turned towards the stronghold, to seek the effect of our long-expected attack. Of the heavy guns on the round tower, some were upturned—all were silent. The stone-work was rent, and deep fissures showed that the edifice could no longer bear the concussion produced by the discharge of heavy ordnance. But the earth-works which we had treated so lightly still poured forth their deadly fire. As the shot from our well-directed guns ploughed through them, clouds of dust rose into the air, and for a moment concealed the embrasures. Then again the white smoke issued from them, and proved that their efficiency was not materially impaired. A gun may have been upset or destroyed, but it was soon remounted or replaced, and the fire opened upon us as before. The contest was thus continued until about nine o'clock, when a report like that of distant thunder rose above the roar of artillery. A thick, murky column ascended from the French batteries, spreading far and wide as it rose into the air. A powder-magazine had exploded, destroying and disabling men and guns. The fire of our allies now almost ceased; a solitary flash at distant intervals only proved the extent of the disaster.

Soon

Soon after this explosion the French ships of war, with their yards dipped, were seen advancing in order of battle. Taking up their position to the south and partly in front of the mouth of the harbour, they opened their fire upon the forts and batteries facing the sea. But the British fleet was still far away, and the French had been nearly two hours in action before it engaged with the enemy. The *Agamemnon* at length moved majestically onwards, preceded by a small steamer, which showed in comparison as a mere speck upon the water. This vessel, used for towing, was commanded by a young mate of the name of Ball. He sought, as his brave commander had forewarned him, an honourable death, or that promotion for services in battle which is the highest ambition of the British seaman. Undismayed and calm, amidst a storm of shot and shell, he threw his sounding-line beneath the huge batteries, and showed the way to the *Agamemnon* following in his wake. A shoal stretching from the point on which Fort Constantine is built left the line-of-battle-ship only 2 feet beneath her keel, although still 800 yards from the enemy. Then was proved the wisdom of that resolute act—not unworthy to be classed with the burning of Moscow—the sinking of a great part of the fleet in the mouth of the harbour. Had the passage been open, the *Agamemnon*, in defiance of the triple batteries which guarded it, would have entered, and the issue of the day might have been different. The practicability and probable result of such an attempt were proved by the desperate step taken by the enemy. Close behind the *Agamemnon* was the *Sanspareil*, screw line-of-battle-ship (Capt. Dacres), and with her were the *Albion*, the *London*, and the *Arethusa* 50-gun frigate, each sailing-vessel being brought into action by a steamer lashed to her side.

As the *Agamemnon* drew near to take up her position, five batteries opened their broadsides upon her. The iron shower rattled through her masts and spars, and aloft she was soon a perfect wreck. But as her admiral had foreseen, the guns of the fort could not be concentrated upon her hull; she was too near to them, and the embrasures were too deep; she, therefore, suffered comparatively little, although exposed to this unequal contest. It was when thus engaged that her Flag-Lieut. Coles, the nephew of Sir Edmund Lyons, went to the *Bellerophon* in a small open boat, and brought this vessel to the assistance of the *Agamemnon*—an act of devotion and courage rarely exceeded.

The *Rodney* (Captain Graham), also coming in to support the *Agamemnon* and the *Sanspareil*, grounded under a terrific fire. Fortunately she was soon relieved from her critical position.

The

The *Albion* and *Arethusa* suffered more from the heavy metal and plunging shot of the *Wasp* Fort than even from the batteries of Fort Constantine. The first was taken out of action in a sinking state; and the other, having been more than once on fire, was compelled to withdraw.

But these gallant vessels unsupported were engaged in a hopeless struggle. The *Britannia*, with those ships which had been ordered to keep her company, was above two thousand yards from the forts; and their fire, although unceasing, was ineffectual.

A thick smoke, scarcely swept away at intervals by the light breeze, enveloped the fleets. It was but by the thunder of their broadsides, which rose even above the roar of artillery from the land batteries, that a spectator could know the fearful contest which was going on. The sun went down before it ceased. Slowly the *Agamemnon* retired—having discharged no less than 3250 shot into the enemy. Well had her noble commander said that morning, ‘that he would rather sink with his ship than that the honour of England should be tarnished!’ And well worthy was he of the tribute spontaneously paid to him by the admirals and officers of the French fleet, who declared that although they had been left for nearly two hours to bear the whole of the enemy’s fire, he, at least, had maintained the antique fame of the British navy.

Who could watch the fall of that day without a heavy heart? We had failed, and a long and terrible struggle was in store for us. We had foolishly underrated the enemy’s resources, and had allowed him to put forth his strength. An occasional explosion in the Russian batteries or a well-directed shot might raise, for a time, the enthusiasm of our men, but it was too evident to all reflecting persons that we had now entered unprepared upon a gigantic undertaking.

Two days elapsed before the French batteries were able to reopen their fire, so destructive had been the explosion. For three days the English batteries continued theirs with some vigour: after which the siege may be said to have ceased on our part, whilst our allies slowly continued their approaches.

What then were the results of the combined attack on the 17th of October? And first, in regard to the fleet. It had always, we understand, been the conviction of Sir Edmund Lyons that the question of the superiority between ships and stone walls depended entirely upon distance. This conviction was borne out. Had the depth of the water permitted the *Agamemnon* and *Sanspareil* to approach within three or four hundred yards, Fort Constantine would probably have been destroyed. Its walls were so much
shaken

shaken that they have been since supported by wooden shores and props. Prince Menschikoff, in his despatch to the Emperor describing the results of the day, mentions the injury they had sustained.* The Russians, moreover, anticipating another attack, have since constructed earthworks *to protect* this enormous stone-work; thereby admitting themselves its weakness. Three times the fire of the Agamemnon silenced that of the fort; and had the whole fleet been near at hand, the object of the attack would probably have been attained. The broadsides of the French ships crippled, to a certain extent, the Quarantine Fort; but their distance, more than 1500 yards, was too great to be effective. The Agamemnon, although the nearest to the batteries, had four killed and twenty-five wounded: the Albion, exposed to the Wasp Fort, which was surrounded by *earthworks*, suffered most, having ten killed and seventy-one wounded. The Sanspareil had eleven killed and fifty-nine wounded; and other vessels proportionally. The Britannia, which had taken up the furthest position from the enemy, had only nine slightly wounded. On the whole it may, therefore, be admitted that the attack of the combined fleet failed, whatever may have been its object: the loss of men and the injury to the ships were not compensated by the damage inflicted on the enemy. We have reason to believe that Sir Edmund Lyons was not in favour of operations by sea on the 17th, unless either an assault was at the same time attempted from the lines, or the fleet was so used as to be maintained in a condition to renew the attack at any subsequent period when an assault became practicable. The result of the attack proved the soundness of his opinion.

By land little more had been effected than by sea. The explosion in the French lines was a serious disaster to our allies, and a source of considerable inconvenience to us. Some of the Russian batteries, which had been directed upon them, were then turned upon the English works, and inflicted much injury. We had several guns dismounted and destroyed, and suffered some loss in men, but less than might have been expected from the unceasing and well-directed fire of the enemy, of whose skill in gunnery we had now fresh proofs. The Russians may have lost many lives, and their works may have been damaged, but their fire remained unchecked. The only part of their defences completely disabled were the two stone towers. The earthworks, raised in a few hours around them, with others of a similar

* There is an impression that some, if not all, of the forts at Sebastopol are built of granite. Such is not the case. They are entirely constructed of the soft limestone found on the heights around the town. The quarries from which this material is obtained are now occupied by the allied armies.

nature, continued to defy all our efforts. Well might our engineers say, after our fire had been opened for some days, that if we could only reduce Sebastopol to the condition in which we had found it on the 26th of September, we might, with some chance of success, attempt an assault.

But with what means at our command had we undertaken to besiege a stronghold almost unequalled for its strength and the extent of its resources? History scarcely presents an instance of a more ill-digested scheme! We had brought with us a siege-train of sixty guns, including mortars, nearly all of a calibre inferior to those of the enemy. The French had a larger number, but they were of brass, and consequently inferior for all purposes to those of the besieged. In order to arm even three batteries we were compelled to dismantle our ships and to employ our seamen. More than eight hundred rounds can rarely be discharged from one gun, on account of its liability to burst and the enlargement of the vent. Few guns, indeed, will bear much above six hundred rounds. As during the first day we had fired above one hundred rounds from each gun, if we had continued at this rate, in less than six days our batteries would have been disabled. The amount of ammunition available was so small that it would have been completely expended in about five days. Some of the most useful guns had only been supplied with one hundred and twenty rounds each. The number of our artillerymen was so inadequate to the working of the siege guns that we were compelled to cease our fire during the night; and thus the enemy was able to repair unmolested the damage done to his earthworks during the day. Even to keep up a moderate fire from sunrise to sunset, and to have the proper reliefs for night-work, the officers and gunners were only every alternate eight hours off duty, which, deducting nearly an hour, the time required to go from the camp to the trenches, left but six for food and repose—an amount of labour which human nature could not long endure. Moreover, every day added to the list of the killed, wounded, and sick, and diminished the number of those fit for active service. Our materials were not only inadequate, but in many instances bad. A large proportion of our shells, owing to some defect in the fuses, either did not burst at all or not at the right moment. We understand that a British officer who was made prisoner states that nothing struck him more in Sebastopol than the number of unexploded English shells lying about—a cause of equal surprise to the Russian engineers. The newly-introduced Madras platforms for the siege guns proved a failure. Not only was it impossible to traverse the guns upon them, but they were soon
broken

broken by the recoil. By the end of the second day of the siege scarcely one remained entire, and the engineers were compelled to substitute for them such planking as could be procured in the country. The siege-train had only been supplied with two or three spare gun-carriages ; several having been soon destroyed, it was subsequently dependent upon those furnished by the ships. There were no adequate means of transport for the ammunition from Balaklava when it was landed : the shot was mostly carried by pack-horses in bags slung across their backs ! With such materials and with such foresight did Government send out an army to capture one of the strongest fortresses and arsenals in the world ! If any calamity should befall the British arms, the future historian will be at a loss for words to describe the incompetency, and to condemn the guilt, of those who thus exposed to destruction the most gallant army that nation ever sent forth.

It is but an act of justice to the engineers, and more especially to that brave, skilful, and zealous officer, Captain Gordon, who after the death of Colonel Alexander succeeded to the command, to add that our batteries were admirably constructed. No accident whatever has happened to our powder magazines, although more than once exposed to the test of the fall and explosion of a twelve-inch shell. When contrasting our works with those of our allies, it must be borne in mind, that whilst our batteries were from 1300 to 1700 yards distant from the enemy, those of the French had approached to within 800 yards, and were consequently far more exposed to injury.

The attempt to silence the enemy's batteries having thus proved hopeless, every means should have been employed in fortifying the ground held by the British army, and rendering it as secure as possible from attack. We have already stated that our position on the heights was considerably weakened by the imperative necessity of including Balaklava within our lines. The defences of that place had been entrusted to a young officer of Engineers, under whose superintendence were erected the redoubts indicated upon our plan.

About the 20th of October, a movement had taken place amongst the Russian troops on the right bank of the Tchernaiia. On the 24th a considerable body of infantry, cavalry, and artillery was observed to have bivouacked at the mouth of a valley, through which the high-road from Simpheropol and Odessa debouches into a small plain. Deserters declared that a fresh *corps d'armée*, under General Liprandi, had arrived from the Principalities. The report was scarcely credited until it was too fully verified on the morning of the 25th October.

By

By referring to the plan, it will be seen that an isolated ridge rises from the left bank of the Tchernaiia, and advances towards Balaklava, ending abruptly in the valley: we will call it the Tchernaiia ridge. It is traversed by a deep ravine, through which runs the road from Simpheropol. Overlooking the valley of Balaklava, it is commanded by the heights occupied by the allied armies. Dividing the valley to the south of this ridge into two parts is the undulation, upon which had been constructed the four isolated redoubts we have described, held by small bodies of Turkish and Tunisian troops. This important position was so ill defended that only one regiment of Highlanders, and a single battalion formed of invalids from various regiments, could be collected in case of need. The camps of the Highlanders, of the Turks, and of the British cavalry were about a mile and a half in the rear. The whole position was, to a certain extent, commanded from the south by the redoubts on the high hills overlooking the harbour of Balaklava, held by a corps of Marines.

Soon after sunrise, on the 25th of October, the enemy opened their fire upon the foremost redoubts from a battery of heavy guns, which had been brought during the night to the southern edge of the Tchernaiia ridge. It was immediately returned by the Turks, and by a French battery on the Sebastopol heights. At the eastern end of the valley of the Tchernaiia, infantry, cavalry, artillery, were drawn up in several massive lines, in order of battle. This was the main body of Liprandi's corps. Behind the Tchernaiia, on the Simpheropol road, was stationed its reserve.

The firing from the batteries had continued for a short time without much result on either side, when a movement was observed in the enemy's ranks. A large body of cavalry advanced steadily down the valley, whilst a column of infantry moved along the foot of the hill to the first redoubt, which was now the object of their attack. The Turks maintained a well-directed fire for about twenty minutes, when the Russian cavalry, under cover of the batteries on the Tchernaiia ridge, turning towards them, they were no longer able to persist, but retired in good order, although suffering considerable loss. The Russian infantry took possession of the redoubt and deserted guns. Those who held the two following redoubts, seeing their comrades retire, followed their example, without an attempt to maintain themselves, and the works were speedily occupied by the enemy, the guns having been spiked, though ineffectually, by the English artilleryman, who had been placed in each. The fourth redoubt making a show of defence, the Russian cavalry did

did not persist in attacking it, and the enemy soon afterwards abandoned the third.

Much unmerited blame has been cast upon the Turks for their conduct on this occasion. Although undoubtedly British or French troops would have defended to the last, if necessary, the redoubts confided to them, yet we question whether any officer would have been justified in attempting to hold them under the circumstances. They were too distant to receive any aid or support from the small and totally inadequate force in front of Balaklava. They were so ill-constructed that the Cossacks had no difficulty in leaping their horses over them. Had the Turks remained a few minutes longer, none could have escaped, and an unnecessary and useless sacrifice of human life would have ensued. General Canrobert, on descending later into the plain, did not hesitate to declare that these redoubts were untenable, consequently no attempt was made to recapture them from the enemy. This opinion has, we understand, been fully confirmed by the highest military authority in this country. Sir Colin Campbell, in his despatch describing the action, says 'that the Turkish troops in No. 1 redoubt *persisted as long as they could, and then retired, and they suffered considerable loss in their retreat*;' and Lord Raglan observes 'that the means of defending the extensive position which had been occupied by the Turkish troops in the morning had proved wholly inadequate.'

We make these remarks because we believe that a very unjust and very mischievous cry has been raised both in the British camp and in England against the Turkish troops. We may add that those who held the redoubts were chiefly Tunisians, with a small body of Turkish militia, not one having, we believe, been under fire before. The officers were the first to leave their posts, and the men were left without any command whatever. The clamour of ignorant people in this country has unfortunately had its influence on public opinion. And yet, after the gallant stand made by the Ottoman army on the Danube, we should have paused before thus condemning by wholesale Turkish troops. This stupid cry, and a prejudice which exists in some quarters, may have prevented the British Government availing itself of the services of men who, if properly commanded, would not be exceeded in courage, devotion, and conduct by any troops in the world. Instead of seeking for Germans, we could have found 70,000 men already collected and partly organised, who only wanted better officers and regular pay to equal, if not exceed in efficiency, any foreign troops we can hire to fight in a cause not their own. We have the testimony of that distinguished soldier Major Nasmyth to the bravery and docility of those

those who fought under him at Silistria. With such a leader as he has shown himself to be, the British Government might shortly be in possession of a Turkish contingent upon which every reliance could be placed. As it is, we have permitted Omar Pasha's army to be nearly broken up for want of money to furnish the necessary means of support; and, with an inhumanity disgraceful to those concerned, we have permitted thousands of miserable wretches, to be cast upon the shores of the Crimea to be insulted and oppressed, and to die of exposure and starvation. We know nothing more shocking and more touching than the accounts transmitted to this country of the condition of the unfortunate Turks at Balaklava, and of the manner in which they have been treated. It is not unnatural that in a camp where heroic courage and devotion are the virtues of almost every man, those who abandoned under any circumstances, in the moment of danger, the post confided to them, should be received with some feelings of contempt and distrust. But the resigned, uncomplaining way in which these poor starving men, dragged from their homes, deserted by all, without pay, without food, without medical aid, and without shelter—dying in the streets and highways untended and uncared for—enduring privations and sufferings far exceeding those of our troops, greatly as even they have suffered—have borne the hard and loathsome tasks imposed upon them, ought to have shown their persecutors that they had in them some of the best elements of the military character. We trust that the ungenerous and unjust outcry will cease, and that the Government will not shut its eyes to the immense value of such men if properly led and adequately cared for.

But to return to the battle of Balaklava. The redoubts having been carried, the Russian cavalry, supported by a considerable force of artillery, ascended the low ridge upon which these works had been constructed. They then divided into two bodies; that to the left, the smallest of the two and consisting of about 400 men, charged down the slope towards the 93rd Highlanders, which, having at first taken up a position in front of the fourth redoubt, had now retired beyond the crest of the hill. That gallant regiment, led by Colonel Ainslie, was ordered by Sir Colin Campbell to receive the enemy in line. The Russian cavalry were checked by the first volley, and without, it is believed, suffering any loss whatever, fell back in some disorder. Perceiving that the Turks, who had formed on the right flank of the 93rd, were again retreating, they were encouraged to attempt a second charge; but the grenadiers of that regiment wheeling round and opening upon them, they again retired.

The second and larger body of cavalry, estimated at between

900 and 1000 men, turned to the right and advanced towards the camp of the Scots Greys and Enniskillen Dragoons. These regiments, returning from the position they had at first taken up beyond the ridge to the left of the line of redoubts, were just in time to form and to meet the Russian charge. For a moment there was a hand to hand fight, and the mingling of horses and men and the clashing of steel; but borne down by the weight and determined onslaught of the British squadron—scarce one-third their number—the Russian cavalry recoiled and were beaten back up the hillside. They made one effort to rally, but were again broken, and now fled in disorder over the plain.

The heavy cavalry was supported by the troop of Horse Artillery under Captain Maude. A shell bursting near that officer, deprived the army for a time of the services of one whose gallantry and noble bearing had earned for him the admiration of the whole British army.

The 1st and 4th English divisions, with a considerable body of French troops of the line, Chasseurs de Vincennes, and cavalry (Chasseurs d'Afrique), had descended from the heights to the support of the small force opposed to the enemy in the valley. The heavy and light brigades of British cavalry were drawn up in two long dark lines on the northern slope, between the third and fourth redoubts. The enemy kept up their fire from the second redoubt, in which they had placed artillery, and occasionally from the battery on the Tchernaiia ridge, without however inflicting injury upon us. Although two redoubts and seven guns remained in the possession of the enemy, yet as far as the defence of our important position and the conduct of our troops were concerned, we had good reason to be well satisfied with the results of the day.

Lord Raglan, with his staff, was watching the contest from the edge of the high cliff overlooking the valley in which the fight had hitherto been waged. The withdrawal of the Russians from the third redoubt, and an apparent movement in the next, led the English Commander-in-Chief to believe that the enemy were removing the captured guns. Under this impression the order which has been so much canvassed was addressed to the Earl of Lucan. It was confided to Captain Nolan, a cavalry officer serving on the staff, upon whom much animadversion has been cast as having been the principal cause of the catastrophe which ensued. But whatever may have been his conduct, and the irritation it may have caused, we conceive that the very fact of his having been the bearer of a *written* order relieves him from all responsibility.

By the time the Earl of Lucan received the order to advance
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and to prevent the removal of our captured guns, the enemy had formed again in front, a dark mass of cavalry and infantry supporting his heavy artillery. A reference to the plan will show the position of the Russians at this time. The main body of Liprandi's corps d'armée was drawn up in order of battle at the bottom of the valley. Considerably in advance of it, and crossing their fire, were the batteries in the first two redoubts and that on the Tchernaiia ridge. The steep sides of the hills were thick with riflemen, supported by columns of infantry.

It was through this deadly approach and in the face of an overwhelming mass of the enemy that the Earl of Lucan, misunderstanding the order to advance—for the Russians, instead of removing the captured guns, as Lord Raglan had anticipated, had turned them upon us—directed the British light cavalry to charge. The Earl of Cardigan, its commander, ventured, we believe, to ask a very natural question, 'what his brigade *was* to charge?' The enemy, he was told, was before him, and the peremptory order was reiterated. Having like a prudent man remonstrated, he proceeded like a brave one to perform his duty. He led forward his squadrons in two lines at a steady pace. Calmly and undismayed they advanced, whilst those who looked down upon the scene watched them, motionless and with bated breath, as men who were hurrying to sure destruction. The white smoke now burst forth before them and on either side. In front rode Captain Nolan, waving his sword and urging his men to the charge. Suddenly his upraised arm remained motionless, and, as he uttered a cry of agony and despair, the glittering ranks passed on: a trooper held his horse, and he fell to the ground. Still the British cavalry did not quicken their speed until they could see each man in the lines drawn up before them. Then, amidst the smoke and roar of artillery, they rushed onwards. Soon reaching the gaping mouths of the guns, they scattered and cut down those who stood round them. The heavy columns behind swerved and opened their ranks to the impetuous stream. Regiments of Hussars and Dragoons sought to check their onward course, but in vain. They did not draw bridle until no enemy was left before them. Scarce 600 English light cavalry had broken through a Russian army!

But of what avail was this desperate deed? The heavy brigade had advanced in support of those who charged; but, checked by the heavy fire, they halted far behind. It was then that General Bosquet spoke those words which so well characterise the heroic valour of the British soldier, and at the same time the wanton way in which his noble life is too frequently sacrificed, '*C'est magnifique, mais ce n'est pas la guerre!*' He saw that if any had escaped from that
fearful

fearful encounter and sought to return, they would still be exposed to the undiminished fire of the flanking batteries. The 'Chasseurs d'Afrique' were, therefore, ordered to silence the guns on the Tchernaiia ridge. Sweeping down into the valley, this fine brigade of cavalry formed into line. Their commander, unwilling to sacrifice uselessly the lives of his troops, checked their ardour, and one squadron alone was directed to charge the enemy's artillery. With a courage and daring not even excelled by that of the brave men to whose aid they were sent, the gallant band struggled, through thick brushwood and over rocky ground, up the precipitous slope. As they reached the summit, each, singling out his man, rushed upon the rear of the battery, cutting down all who ventured to oppose them. For a moment they held the guns; but two heavy columns of infantry, hitherto concealed in a deep ravine, now appeared behind them. Concealed and sheltered by the thickets, they opened a deadly fire. The battery had been silenced and no more could be accomplished; the scattered horsemen retraced their steps to the plain, leaving two officers and fourteen men dead upon the field. They had performed a feat which, though eclipsed by the unparalleled onslaught of the British light cavalry, well deserved the grateful admiration of the British army. To them we owe the lives of those who came back, one by one, some on horse, some on foot, from that fatal charge.

The end of the valley was spotted with the bodies of men and horses. The Cossacks, who had quailed and fled before our horsemen, now returned with confidence. As the wounded lay writhing on the ground they pierced them with their spears; but, as if fearing them even in death, five or six together were seen to gather around one helpless and dying man,—not the only instance of that barbarous cruelty which will remain an eternal stigma upon the Russian name.

That evening nearly two-thirds of the British light cavalry were absent from the muster. It was matter of wonder how even those who survived had escaped. During the night and the following day others who, wounded and unhorsed, had crept for safety into the bushes and crevices of the rocks, straggled into the camp, and the army had fewer to lament than was supposed at first. But still above 230, of whom fifteen were officers, were killed and remained prisoners in the hands of the enemy. Twenty-seven officers were, moreover, wounded, several of whom are since dead.

After the charge of the light cavalry, the generals-in-chief of the allied armies left the heights from which they had viewed the events of the day, and, with their staffs, stationed themselves upon
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the ridge in front of the fourth redoubt. The fire of the enemy had ceased, and they stood, as if awed, in sullen silence. Sir George Cathcart now proposed to recapture by assault, with his division (the 4th), the redoubts and lost guns. But General Canrobert insisted that to retake works which, from their defective construction and their distance from each other and from every support, could not be held against an enemy, would only lead to a useless sacrifice of life. It was consequently decided that we should abandon altogether the outer line of defences, and should now concentrate and increase our forces on a narrow ridge which closes the mouth of the small valley ending in the harbour of Balaklava, and on the hills commanding the town, and should reinforce the British troops by some French regiments, who, aided by the Turks, should at once construct breastworks and redoubts, uniting the heights on either side. The important position of Balaklava would thus be completely enclosed by an adequate line of defences.

The result of the Russian attack on the 25th October may be summed up in a few words. The enemy were taught to fear our cavalry, and the great efficiency of that arm of the British army was proved beyond a doubt. Few Russian horsemen will hereafter stand before men who neither yield to numbers nor to weight. On the other hand, the enemy's cavalry had shown itself irresolute in action and wanting in courage, fully confirming the opinion which had been formed of it from its conduct during the previous part of the campaign.

We have already observed, that although the French had fortified that portion of the heights which was occupied by the 'Corps d'Observation' under General Bosquet, with trenches, earthworks, and redoubts, the English had completely neglected to protect the edge of the plateau held by our 1st and 2nd divisions to the north of the Woronzoff road; even two roads leading up from the valley of Inkerman in the rear of our second division had been left comparatively open. This neglect had been pointed out by Sir De Lacy Evans and the Duke of Cambridge; the former had endeavoured to throw up a few breastworks of stone and earth, but they were close to the camp and completely inadequate for the protection of this most important position. On the night of the 25th he had been called upon to furnish 800 men for the defence of the trenches; but impressed with the danger which threatened our army on this side, and the possibility of an attack at any hour, he remonstrated. In consequence of this opinion the order was rescinded, and he was thus able to meet on the following day what had been so long foretold—an attack upon this undefended part of our lines.

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On the morning of the 26th several Russian columns of infantry, accompanied by artillery, were seen to issue from the eastern end of Sebastopol. It was at first believed that they were marching to join Liprandi's corps by the road, still open, through the Inkerman valley; but turning to the right they ascended the hill, and suddenly appeared on the crest which commanded the camp of the 2nd division. Another body at the same time approached by the road leading from the valley to the heights. They came somewhat by surprise upon the pickets belonging to the 30th and 49th regiments. The conduct of an officer at the head of one of these small parties excited universal admiration. Holding his ground with undaunted courage against an overwhelming force, he succeeded in checking for some time the Russian advance; and when the ammunition of his men was expended, charging the enemy with his sword, he fell shot through the chest: this was Lieutenant Conolly of the 49th. Scarcely less distinguished were Captain Bayley and Captain Atcherley, and a serjeant named Sullivan, at the head of the pickets of the 36th regiment. This handful of brave men opposed nearly 7000 men until Sir De Lacy Evans was able to mature his plans and to form his two brigades into order of battle. That commanded by Major-General Pennesfather was placed upon the left in advance of the camp; that under Brigadier-General Adams upon the right, supported by the artillery of the 1st and 2nd divisions under Colonel Fitzmayer and Colonel Dacres. So admirably were the troops disposed, and so well were the efforts of their General seconded by those who, serving under him, were inspired with that confidence which perfect reliance upon a commander will at all times give, that the enemy was not only speedily repulsed, but, taking to flight, was pursued almost into the town, with a loss subsequently estimated at nearly 1000 men, whilst our own amounted to only 12 killed and about 80 wounded. One hundred and sixty Russians were left dead within our lines, and 30 prisoners fell into our hands. The second division alone, at that time scarcely 1200 strong, defeated nearly 8000 men. The Guards, under the Duke of Cambridge, although protecting its flank, took no part in the action, nor did the corps of General Bosquet, who, as was his wont, hastened to our aid as soon as the enemy appeared.

In this action, again, the execution of the Russian plan of attack was not equal to the conception. As it is impossible that the enemy could have contemplated, with so small a number of men, the permanent occupation of the position, it is probable that, after having reconnoitred it, they intended, having forced our lines in their weakest point, to take our batteries of the right
attack

attack in reverse, and having destroyed them and spiked the guns, to return into Sebastopol.

The attempt, although unsuccessful, should have been a further warning to us; but nothing was done towards fortifying these heights. It has been alleged that there was a want of men to construct proper defences; but after the 5th of November, although no new reinforcements had arrived, troops were found. In truth the position was of such vast and paramount importance that any sacrifice should have been made to protect it. The enemy, although they did not succeed in their attempt, so far profited by it that they ascertained the weakness of our defences.

In the meanwhile large reinforcements were daily joining the Russian camp to the north of Sebastopol. Extraordinary efforts were being made to bring down those troops which the Austrian occupation of the Principalities now placed at the disposal of the Czar for the defence of the Crimea, and all the resources of the country were employed for this purpose. Carts, carriages, post-horses, bore one corps d'armée from Odessa to the Belbec. Before we even received notice of their approach, fifty thousand men were collected on the heights of Inkerman, the greater number of whom the generals of the allied armies had been assured from home were still watching the frontiers of Bessarabia in expectation of an Austrian invasion!

Prince Menschikoff resolved, by one great effort, to force our ill-defended position, which, once carried, would place the allied armies at his mercy. His plan was well conceived. Our front was exposed, our flank and rear open, and he could pour his columns from all sides upon our devoted bands, before we could even know that they were near. A despatch, written to the Emperor, his master, some days before the execution of his design, betrays the confidence he felt in its result, and the almost mad excitement of his brain at the prospect of success. 'A terrible calamity,' he wrote, 'impends over the invaders of your dominions. In a few days they will have perished by the sword, or will be driven into the sea. Let your Majesty send your sons here, that I may render up to them untouched the priceless treasure which your Majesty has entrusted to my keeping!' Two days before he was to fulfil his pledge, two imperial carriages, preceded by outriders, and accompanied by an escort of cavalry, were seen to enter Sebastopol by the high road from the north, and the sound of rejoicings came up from the city.

Soon after midnight, on the morning of the 5th of November, those who guarded the trenches and lay sleepless in their tents
listened

listened to the tolling of bells, as for some sacred ceremony. The distant sounds of chanting are even said to have been heard by persons who watched still nearer to the beleaguered city. The solemn peal ceased about two hours before daylight, and was succeeded by the bright flash and heavy report of ordnance in the rear of the British lines. After a little time there was again deep silence, only broken by a low rumbling heard by the furthest pickets, who thought it to be the noise of waggons laden with supplies entering the town.

The dawn long struggled through the mist which hung on the heights of Sebastopol. As daylight broke a party of unarmed men appeared on the crest of the hill, above the eastern end of the harbour of Sebastopol, and in front of the second division of the British army. They made signs as of surrender to the pickets which watched those heights. The officer believing them to be deserters advanced to receive them. Having thus been thrown off his guard, he and his men were suddenly surrounded and seized by a large body of troops who had lain in ambush behind the ridge. An alarm was thus avoided, and the first Russian columns were fast drawing near to the British lines, partly concealed by the mist, before they were perceived by the remaining pickets, which gave notice of their approach, and boldly resisted and checked the advance of the enemy. They only fell back when their ammunition had been expended, and when completely overpowered by the weight of succeeding masses of men. The second division, to which, though reduced to nearly half its numbers by battle and disease, was still confided the important post now menaced, had scarcely time to collect to receive the Russian advance. Their able and experienced commander, overcome by his duties, anxiety, and disease, was on a sick bed at Balaklava. General Pennesfather had taken his place. He hastily formed the decimated regiments, and rapidly led them to meet the enemy who were pouring in dense masses over the hill. Soon they opened the deadly fire of the *Minicé*, making havoc from afar amongst the approaching columns. The Russians, seeing that the British troops were now preparing to receive them, rushed forward with loud and discordant yells rising above the roll of musketry and the roar of artillery—a sound—how unlike the hearty English cheer!—never to be forgotten by those who heard it on that memorable morning. At the same time their numerous artillery, which had been brought to the edge of the hill over which they had been so noiselessly dragged; and the guns of the town and ships of war, threw an unceasing volley of shot and shell not only into our troops but even beyond their camp, tearing

tearing to pieces the tents and killing the horses which were still fastened to their pickets. The batteries of the 1st and 2nd divisions soon took up a position on a rising ground in front of our lines, and sought in vain to check the heavy fire.

Whilst fresh columns ascended the hill facing the end of the harbour, others, winding round its base, threatened our flank by a road through a deep ravine, and our rear by a second track leading up from the Inkerman valley. Another large body advanced towards the five-gun battery through a narrow gorge, stretching from 'Careening Bay' almost into the centre of our position.* Thus was the right of the allied armies menaced on all sides by overwhelming numbers.

The Guards were in the immediate rear of the 2nd division, and consequently the nearest to the point of attack; the Grenadiers and Scots Fusileers lost no time after the first shot was fired in hurrying forwards. The greater part of the brigade had but just returned from the trenches, in which they had been exposed to rain since an hour before daylight on the previous morning. Benumbed with cold, wet, long without rest, and for many hours without food, they were led against the enemy. As they advanced, justly anticipating that the enemy would ascend in force by the road in the rear of the second division, they turned to the right. On a small spur, some way down the precipitous hill overlooking the valley of Inkerman, was a small battery built of sandbags and fascines: it had held two siege-guns, placed there to silence a gun which, mounted by the Russians on the opposite heights, above the ruins, had caused much annoyance to our camp. The desired object having been effected, the two guns, being required elsewhere, had been removed. The unarmed battery was occupied on that morning by a picket of the 55th Regiment. In front of it, before daylight, the enemy had brought up heavy guns, which opened suddenly upon this small body of men. Surprised by an overwhelming force, and unsupported by their own division, they were compelled to fall back, after making for a short time a vigorous resistance, and losing nearly two-thirds of their number. As they retreated the Guards were advancing to the spot: seeing that the pickets were retiring before the enemy, who had already taken possession of the battery, the Grenadiers, giving a loud cheer, charged down the declivity. It was the work of a moment. The Russians were driven headlong from the work. The three regiments of Guards, the

* In the plan we have given, to which we refer our readers, these roads are indicated, as well as the position of our army on the morning of the 5th November.

Coldstreams having soon after joined the rest of the brigade, held the battery, formed into line at right angles to it, and occupied the ridges of the projecting spur.

Then commenced a struggle which has rarely if ever been equalled in modern warfare. The columns of the enemy, unchecked by the English fire, again impetuously advanced with fearful yells up the slope, attempting to turn the right flank of the Guards. The Grenadiers, united with the Coldstreams, met the approaching columns with a second charge. Again the enemy were driven back, but again, urged onwards by the overwhelming numbers behind, they returned. The ammunition of the Guards was nearly expended, and their ranks broken and thinned by those who had fallen in this bloody contest; but still they held their ground—firing upon the advancing foe on one side, rushing with the bayonet upon those who attempted to surround them on the other. Fresh supplies and some reinforcements from the 4th division at length reached them. But still the Russians pressed on with undiminished strength. Again our brave men were in need of ammunition, and were fast falling before the unceasing fire of the enemy, who, concealed by the thick brushwood and by the undulating ground, had now succeeded in surrounding them. They could but give way. Charging with desperate fury, they bore their colours triumphantly through the dense mass. Reaching a breastwork which had been raised at some distance behind the battery, they formed again, and with the bayonet prepared once more to dispute every inch of ground. During more than five hours this heroic brigade almost alone resisted the attack of an overwhelming force, supported by a heavy and continuous fire of artillery. Nearly two-thirds of their numbers were mown down in this hand-to-hand fight. Yet they knew that the safety of the British army depended upon them, and they nobly held their own—each man performing deeds of almost unexampled heroism.

The 4th division, whose camp was far distant, had early hastened to the point of attack led by Sir George Cathcart, but they did not reach it until after the Guards had long been engaged in the struggle for the possession of the two-gun battery. One brigade under General Goldie was detached to the assistance of the 2nd division, now hard pressed on the left by the increasing columns of the enemy. The other, commanded by General Torrens, turned to the right and sought the Guards, who were almost surrounded. Sir George Cathcart believed that the most effectual succour could be given them by turning the enemy's flank, and thus compelling them to fall back from the disputed battery. Unwilling to credit the earnest representations made to him
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that the Russians had already occupied the opposite heights, he placed himself at the head of a few companies of the 68th Regiment and with undaunted spirit entered a gully to the right of the earthwork. But he had scarcely descended far before he perceived the Russians on the ridges above him. He saw, too late, that he was surrounded. Attempting to lead back his men, this distinguished officer fell mortally wounded, and his body remained for some time in the midst of the enemy. His gallant aide-de-camp, Col. Charles Seymour, who had long shared the fortunes of his chief, and who stooped to receive his last breath, perished by his side.

But a contest no less terrible than that around the two-gun battery raged on the hill above the harbour, on which the Russians had first appeared, and which was separated by a deep ravine from that held by the Guards. The ground was covered with low and thick brushwood, and was much broken. A cloud of skirmishers thrown out by the advancing columns were thus able to keep under sufficient cover, and to inflict considerable loss upon our troops, who could with difficulty advance in line. The 2nd division had been joined by a brigade of the 1st—together they rushed upon the enemy, and for some moments held him in check. Their ammunition having been expended they even received the approaching columns with stones, until exhausted they were forced to retire. Under cover of the incessant and well directed fire of their artillery the Russians advanced with renewed confidence, charging our retreating regiments and redoubling their unearthly yells. Four of our guns were already in their possession, and they were almost in the midst of the tents of the second division. For a moment the issue of the day seemed doubtful, and the sternest heart felt a thrill of doubt and dread. But again, by superhuman efforts, our broken regiments rallied, charged into their dense ranks, drove them back in disorder, and recaptured the guns.

General Bosquet, as usual, had lost no time in ascertaining the nature of the attack, and had ordered two battalions of infantry to aid in the defence of the British position. He would have hastened himself to take part in the contest with a larger force, but, the Russian fire suddenly slackening between eight and nine o'clock, Sir George Cathcart, under the impression that the enemy were retiring, sent to inform him that there was no longer need for his immediate advance. At an early hour of the morning a movement had taken place in the corps d'armée, under Liprandi, in the valley of the Tchernaiia. A column of infantry, with riflemen, had advanced to the foot of the heights, and had exchanged shots with the Zouaves and French troops
defending

defending that part of the position. The batteries on the Tchernaiia ridge and in the redoubts, and some field-pieces, opened upon Balaklava and upon the edge of the plateau, in rear of our lines. This fire was returned, and having been continued on both sides for some time, without any apparent effect, the Russians fell back, but still appeared to threaten a further advance. Such being the case, General Bosquet could not withdraw the troops which defended this part of the position, and, for a time believing it possible from the slackening of the fire in front of the British camp that, after all, the real attack might be made in the rear, he speedily returned to his own post. But the Russian artillery had only ceased awhile, to draw nearer to the English camp under cover of the mist which still prevailed. Soon after it opened again with redoubled violence. Fresh bodies of men at the same time came over the crest of the hill and up the ravines. Our regiments, no longer able to oppose their shattered lines to the exhaustless stream of men, were forced back at all points, and were retreating mingled together in complete disorder.

This was the most critical period of the day. More than an hour had been lost by General Bosquet's return to the rear. He now learnt the magnitude of the danger. Presuming that General Liprandi's attack was but a feint, with the decision and courage of a true general he resolved at once to act upon the supposition. Leaving, therefore, his position almost undefended, he brought nearly the whole of his force to the aid of the English. Advancing to the verge of the range of the Russian artillery, he halted his troops, and, surrounded by his staff, rode himself into the midst of the conflict. At this instant the dispersion of the mist revealed the scene for the first time. He surveyed it with a calm and practised eye; he returned to his men, and, making the dispositions he deemed necessary, gave orders for the attack. The field-artillery covering the left of our position was now nearly overpowered by the superior weight and range of the Russian guns. A heap of dead and wounded men and horses mingled together proved the deadly nature of the enemy's fire. General Bosquet sent two troops of horse-artillery and one field-battery to protect and assist our guns. At full speed they swept before our almost disabled batteries, and taking up a position in front of them, amidst the cheers of our men, opened a rapid and well-directed fire upon the enemy's powerful artillery; but still the allies could not contend against the superior weight and length of range of the Russian ordnance.

It was, however, in the rear of the 2nd division, in the ravines, running up to the two-gun battery, where the Guards were engaged in the deadly struggle, that the danger threatened most;

most ; and it was to that point that General Bosquet principally directed his troops. A regiment of Zouaves, and of Indigènes or Arabs, were accordingly ordered to charge the enemy, who covered in one dense gray mass the sides of the hills. Rushing headlong upon the Russians with an impetuosity that nothing could withstand, they drove them back in confusion. These brave and intelligent troops on this day well sustained their reputation. Not affecting the calm and steady advance of the British lines, they scattered themselves over the broken and undulating ground, seeking for every irregularity in the soil ; sheltering themselves behind the brushwood and rocks ; firing with deadly accuracy into the opposite columns ; then suddenly darting forward, and with irresistible daring throwing themselves upon the wavering ranks, they struck terror into the Russian infantry. 'See !' cried their brave general, as he gazed with admiration upon them ; 'see ! they bound like panthers from the bush !'

The French troops of the line, moving forwards more steadily in support of our broken regiments to the left, were exposed to a heavier fire from the Russian artillery on the ridge, as well as from the batteries of the town and ships. For a moment they quailed before it. Then with loud shouts of 'Vive l'Empereur !' and amidst the cheers of the English, they charged with the bayonet. Thus relieved, our disordered regiments were able to form again ; and when their allies, in their turn, were overpowered by numbers, they once more rushed upon the enemy. Soon the various uniforms of the two nations were mingled together : English regiments charging with French ; their shouts of defiance and of victory rising together, and their blood moistening the same soil. Both were inspired with a generous rivalry, and returned with fresh ardour to the fight. Nothing could resist such men animated by such a spirit. The vast wave, which threatened at one time to overwhelm the British camp, again broke upon these heroic bands, and rolled back over the heights.

The Russian artillery, however, maintained its position, and by its incessant and vigorous fire encouraged the renewed attacks of the infantry. It has been estimated that the enemy had no less than ninety guns in the field on this day, almost every one being superior in weight and range to those possessed by the English. A large number were 'guns of position,' that is, cannon of too large a size to be commonly used in the field, and intended for permanent works. Moreover, the fleet and town batteries threw a continual volley of heavy shot and shell into our lines. The contest at one time of the day, when a bright sun-
shine

shine had dispelled the mist, was becoming a mighty duel of artillery to be decided by the number and weight of the guns on either side. As yet the allies had been almost overpowered, and had suffered most severe losses. We had still two 18-pounders remaining in the park of the siege-train. Lord Raglan ordered them to be brought up to the front. The execution of this order was declared to be impossible, but Colonel Dickson had already anticipated it, and prepared to carry it into effect, Colonel Gambier, who commanded the siege-train, being wounded. By the help of men and horses he dragged the heavy guns through roads deep in mud, and over the rough ground. Reaching at last a ridge in front of the camp of the 2nd division, he proceeded, although exposed to the heaviest fire, with admirable calmness and judgment, assisted by Captain D'Aguilar, to place them in position. He well knew how much depended upon the steadiness and accuracy of their practice. They were opposed to a large number of guns of equal if not heavier calibre. The ammunition provided for them was limited, and not easily obtained; * not a round, therefore, was to be wasted. The unerring shot crashed through the Russian batteries, each one disabling a gun or destroying men and horses. Soon they began to waver. The horses were seen to move forward. Another well-directed shot plunged through them, and the artillerymen, harnessing their teams, fell back upon the edge of the hill where they had first taken up their position. But they were still within reach. Again their guns were overthrown, and tumbrils lay broken on the ground. Their fire slackened, and the heavy columns of their infantry, no longer urged onwards by it, were falling back on all sides. The Zouaves and Indigènes relentlessly pursued them. In a little while none were left on the hill facing the British lines, but the still powerful Russian artillery carried on the battle and covered the retreat. Three times were the entire detachments which worked the two English guns mown down before the enemy's fire completely ceased and their last ammunition waggon had disappeared over the crest of the hill, leaving in one spot a heap of dead, sixty-eight horses, six entire and several broken tumbrils, and the shattered remains of several gun-carriages. But no gun had been abandoned. By extraordinary exertions the Russian artillerymen had, as usual, prevented any such trophy falling into our hands.

The battle was now won. A heavy fire from the town and ships still covered the retreat of the Russians. Lord

* It will appear scarcely credible that these highly useful guns had been supplied from England with only 120 rounds of ammunition each.

Raglan, Generals Canrobert and Bosquet, surrounded by the officers of their staff, advanced to the edge of the cliff beneath the two-gun battery. Long before they reached the spot they dismounted, for no horse could tread there on that day. A heap of dead and dying, perhaps more dreadful than ever field of battle had shown before, encumbered the ground. On a small plain beneath, on the opposite side of the river, were gathered together the thousands which had been driven from the heights. Broken columns were hurrying in utter disorder over the narrow causeway which crossed the marshy valley, although there were none to pursue. A French battery advanced at full speed to the edge of the overhanging height, and poured its fire upon the panic-stricken crowd. It reeled to and fro, and then breaking up, the hill sides and the ravines were covered with flying men. No army had ever made a more disgraceful retreat! Before nightfall not a remnant of the mighty host which had that morning been led to battle could be seen.

Whilst the battle was raging on the heights in front of the second division, a large body of infantry with artillery, under General Soimonoff, attempted to turn our flank by ascending the valley to the right of the five-gun battery; but they gave way before the steady and well-directed fire of a small body of Marines, and of the first brigade of the light division under General Codrington. At the same time a sortie was made upon the extreme left of the French lines. About 5000 men issuing from the town under cover of the mist, surprised and entered two batteries; but they did not long hold them. General Forey, who commanded the division attached to the siege operations, quickly advanced. The Russians were driven back in disorder and with great loss. General de Lourmel, carried away by the ardour of the pursuit, fell mortally wounded under the very walls of the town. In him the French army lost a leader renowned for his chivalrous bravery.

Such was the battle of Inkerman, one of the most memorable in the annals of war. For nearly seven hours 8000 English and 6000 French soldiers sustained a hand-to-hand fight against nearly 60,000 men, supported by artillery vastly superior in number and calibre to any that could be opposed to them. Upon the issue of the struggle depended the very existence of the allied armies. Had the Russians succeeded in their attempt, the prophecy of their commander might have been fulfilled—their enemy would have perished by the sword or have been driven into the sea.

Again in this instance an admirably planned attack was ill executed. It owed its failure principally to two causes: the
want

want of vigour in the attempt of General Soimonoff to turn the flank of the 2nd division by ascending the valley leading up to the five-gun battery, and the unskilful manner in which General Liprandi executed his ill-concealed feint. But it is principally to the latter cause that the complete defeat of the Russians must be attributed. Had the attack upon Balaklava and our rear been sufficiently persevered in, General Bosquet could not have moved his battalions to the assistance of the English. Without this aid, our troops could not have maintained their ground against the vastly superior numbers brought against them. The Russians, encouraged by the presence of the sons of their Emperor, blessed by their priests before entering into battle, and drunk with religious enthusiasm and strong drink, rushed with blind fury upon our troops. The foremost columns, when once engaged in the struggle, could scarcely fall back; there was no space for them to deploy, and the thick brushwood impeded their movements. Masses after masses of men pressed up the hill-sides, pushing onwards those that were in front, and leaving no room for retreat. Upon these dense crowds the Minié told with fatal effect, and when once they were broken, the most complete confusion ensued. Hence the terrible slaughter in the Russian ranks. The excitement of a first success having subsided, they rapidly gave way and fled panic-stricken before the impetuous and repeated charges of the French and English troops. Their artillery was well served, and inflicted great loss upon the allies. But again the fear of leaving a trophy made the gunners uncertain in their movements, and induced them to retire too soon. More than once the horses were led to the guns whilst the issue of the struggle was still doubtful. Colonel Dickson well divined the best mode of defeating the enemy, when, neglecting the columns of men, he directed his round shot upon their guns. The artillery once silenced or hesitating, the Russian infantry no longer fought with confidence, but soon fell back in disorder.

The British troops fought on this day with a calm and steady courage that has never been surpassed. Led on by their regimental officers, they charged over and over again the massive columns of the enemy, and drove them back with the bayonet. When, without ammunition, and borne down by overpowering numbers, they were compelled to retire, they formed again as soon as they were out of fire, and rushed once more into the fray. We owe our preservation to the indomitable courage and heroic conduct of the soldier; and well, therefore, was Inkerman called by one consent on the field 'the soldiers' victory.'

The imminent danger we had incurred on the 5th November
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opened the eyes of the nation to the precarious position of the allied armies, and to the desperate nature of the enterprise in which we were engaged. No longer the besiegers but the besieged, with a force nearly twice as great as our own upon our flank, a fortress of enormous strength and an arsenal with unlimited resources in our front, and reinforcements and supplies pouring into a place which we were unable to invest—it was only by enormous exertion that we could continue to hold the ground we had occupied. When the time had almost passed, Ministers began to make their efforts, and it may be hoped that after all the sacrifices we have made we may succeed in our object.

The unexpected resistance which they had met on the heights of Inkerman almost paralysed the Russians. They made one more attempt upon Balaklava. From a hill commanding the height occupied by the Marines they opened an ineffectual fire of field-pieces. The day after, a crowd was seen dragging a siege-gun of large size up the precipitous ascent. It had nearly reached the summit, when the weight, overpowering men and horse, hurled them down into the ravine beneath. With these exceptions, and occasional sorties, principally directed against the French batteries, and all vigorously repulsed, the Russians have not again ventured upon an attack. The allied armies, at the same time, have remained on the defensive; each satisfied to hold their position until fresh reinforcements of men, and fresh supplies of the munitions of war, should enable them to recommence the siege with some prospect of success.

The approach of the stormy season further disclosed the neglect and improvidence in the Government, and the gross negligence and incompetency of the departments to which the details and conduct of the war had been confided. Our army was left without adequate clothing to protect them from the inclemency of the weather; with scarce sufficient food to sustain them; and without an adequate medical staff to care for those who were wounded in battle, or disabled by sickness brought on by the privations and sufferings to which they were exposed. From the absence of the means of transport and the want of a proper road, the operations of the siege have been paralyzed, our horses have been destroyed, the supplies, which might have preserved the healths and contributed to the comforts of the soldier, have been allowed to rot, and the sick have been left exposed to wet and cold in miserable tents * at Balaklava. The

* It will scarcely be credited that many of the tents sent out with the army were used in the Peninsular war. It need hardly be added that they afforded no protection whatever.

French, more provident than ourselves, had foreseen the difficulties and unavoidable sufferings of a winter campaign. They had constructed roads between their lines and the place of disembarkation, and had moreover made depots for the commissariat in their camp, anticipating the possibility of a temporary interruption, from weather or other causes, of communication with the harbour: provisions for the men or provender for the horses have thus been at all times at hand. Large substantial sheds of wood were easily built for their sick and wounded, and afforded them effectual protection until they could be removed to Constantinople, where well ordered and well provisioned hospitals, furnished with all that humanity and medical skill could devise, were ready to receive them. Their shipping in Kamish Bay has been admirably managed; and although greatly inferior to ours in tonnage and in size, has never failed to furnish them with necessary supplies, whilst proper and well-enforced regulations have prevented confusion and preserved a commodious and unencumbered landing-place in the harbour. Contrast the condition of our army, and the management of the department connected with it, with that of our allies; the state of our roads, the sufferings of our sick, the harbour and town of Balaklava, our hospitals at Scutari, and the unparalleled sufferings of our men and animals! As in all the naval movements we have hitherto been behind them, so in all that tends to the efficiency and comfort of the soldier, we have shown ourselves infinitely their inferiors. These are humiliating reflections, and still more painful when it is remembered that they are caused by our own want of common foresight, and our obstinate determination to reject every warning and every counsel.

Before we conclude, we cannot but refer to the ready and truly considerate manner in which General Canrobert and his officers have assisted us in our wants. By his willingness to afford at all times that aid which our own negligence and imprudence have compelled us to seek at his hands, no less than by his eminent qualities as a commander, and the generous way in which he has always borne testimony to the courage and conduct of our troops, he has gained the confidence and esteem of our army, and has strengthened that bond of union which now exists between the two nations.

By the end of the year the allies, after extraordinary exertions, were, it would appear, in a condition to commence a second attack upon Sebastopol, and possibly, at the time we are writing, that event has actually occurred. We devoutly hope that it may prove successful. Indeed we can scarcely doubt that if our preparations

parations and resources are such as we are informed they are, the *south side* of the place must succumb before our fire and a subsequent assault. But we must be prepared for a heavy loss and for further difficulties. Whatever may be the result of this expedition—whether the fall of Sebastopol be but the first event in a long and bloody war, or whether the nation suffers a hollow and uncertain peace to be concluded, utterly inconsistent with the vast sacrifices it has made—the future historian of the campaign in the Crimea will record with mingled feelings the indomitable courage and long suffering of an English army,—the incapacity and neglect of an English Ministry,—and the generous forbearance and noble spirit of the English people.

ART. IX.—*Corsica*. By Ferdinand Gregorovius. Stuttgart and Tübingen. 1854.

FEW countries at all within the pale of civilization have been so little frequented and described by travellers as Corsica, Accessible by its position, magnificent in its scenery, remarkable for the moral peculiarities of its inhabitants, the birth-place of Napoleon, it has claims alike upon the pen and pencil which have hardly yet been recognized by any master of either competent to do them justice. We doubt not that the British Museum contains works from which very ample information may be derived on the subject, but we know of none—at least, in English—which, since Boswell's time, has attained notoriety. Though we cannot venture to assert that no one of the enterprising artists in the service of the *Illustrated News* has dashed off a woodcut of some picturesque feature of the island, some spell would seem to have protected it alike from the tourist, the book-maker, and such visitants as Stanfield, Roberts, and others, who on steel or stone have made so many glorious scenes accessible and familiar to sedentary men of moderate incomes. Other islands of the Mediterranean have fared better. We have explored, for instance, well pleased with Mr. Tyndal, those strange and unaccountable remains of antiquity, the round towers, which in Sardinia attract and puzzle the erudite. Corsica, indeed, does not abound in remains of classical or more remote antiquity; but, these apart, is far richer in materials for the pencil of the artist or the pen of the historian than its immediate neighbour. We can hardly account for this neglect. Corsica would certainly not be a judicious selection for a bridal tour; Brown, Jones, and Robinson might

might encounter there privations and inconveniences to which even the Procrustean beds and scanty toilette apparatus of Rhine-land inns would have failed to inure them. To Englishmen, however, in pursuit of novelty, excitement, or instruction—in an age when newspaper correspondents fling themselves into besieged towns and join in pitched battles—such difficulties as these are not worth mention. It is true that an unhappy reputation attaches to the Corsican for making free with the life of his fellow-man, and never was a reputation better founded. Still this peculiarity presents no just cause of hesitation to the traveller. The Corsican forest swarms with bandits; but the term implies there something different from its usual acceptation in Italy. It designates not a highway robber, but a man who, having attempted or committed murder, has fled to the mountain. That he may sometimes degenerate into the former character is probable, but we have no reason to suppose that an unoffending stranger is exposed to danger in Corsica equal to that which is daily encountered in Spain, and occasionally in parts of frequented Italy. The tourist must be very unlucky, or very imprudent, who makes himself obnoxious to the bloody code of the *Veudetta*.

Those who tread in the footsteps of Mr. Gregorovius, who eloquently vindicates the claims of the island to public notice and regard, will find in his volume little instruction for their guidance as to accommodation, diet, or conveyance. Mr. Murray must procure the materials for an eventual handbook by messengers of his own. To make up for these deficiencies Mr. Gregorovius is a diligent and enthusiastic collector of the traditions of an heroic race, a man of strong feeling for the great and beautiful, and an able historian. His preliminary sketch of the history of Corsica we consider a production of the highest order, though we are not disposed to overrate the relative importance of this portion of his subject. We bear in mind that this island, the poor and rugged nurse of a very savage progeny, never, like Greece, exercised an influence on the world disproportioned to its extent and material resources. The narrative of its fortunes from its earliest records is a somewhat monotonous tale of war and violence; but we cannot forget that the blood of its inhabitants flowed through centuries in a perpetual struggle for national independence with a series of unscrupulous invaders—the Moor, the Spaniard, the Pisan, the Genoese (who were the worst of all), the German mercenary, and the Frenchman. The history of Corsica is a long tragedy acted on a minor theatre, but very many of the actors were worthy of a more splendid stage

stage and a larger audience. Few have attained the notoriety which great deeds and high motives well deserve. Napoleon is scarcely to be considered an exception; for though the native disposition is to be traced in his character, and his military career commenced in the island which gave him birth, his fame is little connected with it. Those of whom we now speak lived and died for Corsica, and Paoli is perhaps the only one whose name has been made familiar to our ears. Even he is best known to Englishmen as the object of one of Boswell's idolatries.

Among the earliest writers who make any mention of Corsica are Seneca, Diodorus, and Strabo. The descriptions of Seneca, both as regards the inhabitants and the natural features of his place of banishment, are tinged with the ill-humour of the exile. Diodorus is more indulgent, probably more just: he is at issue with Strabo as to the character of the Corsican slave, defamed by the latter as sullen, obstinate, and a bad bargain. He notices, as universal in the island, the quality of strict respect for property, which our author asserts to be equally predicable of the peasant of the present day. The spoils of the bee belonged, without dispute, to the first finder. The sheep marked with the owner's symbol required no guardian. One curious custom Diodorus mentions, identical with one which early North American travellers attribute to certain tribes of Red Indians. During child-birth the mother was neglected, but the father took to his bed, surrounded by relatives, and went through all the forms of helpless sickness for a day.

A spirit of resistance to domestic as well as foreign tyranny was early rife in Corsica, which, if her coasts had been less accessible to invasion, might have made her an insular Switzerland, and a depository of settled free institutions in times when they were scarcely known in Europe. The island, however, at all times appears to have possessed a sort of magnetic attraction for the armed adventurers of many countries, both Christian and Mussulman. Here indeed, as elsewhere, the noble, in his fortified stronghold, long maintained a struggle for power, which he abused; but at no time was serfdom acknowledged as an institution in Corsica. The first of a long list of heroes and martyrs, of whom there is any credible account, was Sambuccuccio, who in the early part of the eleventh century overthrew the baronial oppressors, headed by the Lord of Cinarra. He is famous for the establishment of an elaborate system of free territorial institutions, of which the traces still remain in the designation *Terra del Commune* appended to the district between*

between Alexia and Calvi. The following is our author's account of Sambuccuccio's plan:—

'After his victory over Cinarra he established a rural league or confederation, similar to that founded, under analogous circumstances but much later, by the Swiss mountaineers. All the country, within a circuit embracing Alexia, Calvi, and Brando, united itself in a free community, and took the designation Terra del Commune, which it still retains. The structure of this union, simple and purely democratic, was regulated by the natural demarcations of the country; for the land was, by its system of mountains, distributed into separate valleys like the cells of a spider's web. All the hamlets of one valley were united into a parochial district, still bearing the Italian title, which it has borne from the remotest times, of *pieve* (plebs). Each pieve embraced a certain number of communes or hamlets (*paese*). Each commune next chose, in assembly held before the church, a podesta and two or more fathers of the commune, probably from the first, and certainly later, for one year. It was the duty of these fathers, in accordance with their titles, to exercise parental care over the welfare of the commune, to keep the peace, and protect the weak. They met and named a particular official called "caporale," who seems to have discharged the functions of a tribune of the people, and was specially charged with the maintenance of popular rights. The podestas again met and chose the *dodici*, or council of twelve, the highest legislative body of the confederation. . . . These seeds of a free polity were never stifled; they maintained at all times a love of country scarcely paralleled, and an heroic spirit of liberty which made it possible for Corsica, at a time when the principal civilized communities of Europe were still under the yoke of despotic institutions, to exhibit the pattern of the democratic constitution realized by Pasquale Paoli, which arose before America had won her freedom, or France had undergone her revolution.'

The victory over the nobles, on which this constitution was founded, was in itself no slight achievement. Few, if any, of these baronial tyrants were of native origin. They sprung, for the most part, from Italian adventurers, who since the year 713, when the island was first invaded by the Saracens, had waged war against the infidel on this theatre of action, and had won, in return for such service, or by force of arms, fiefs and dignities. To meet their growing influence, Corsica had none of those aggregations of commercial or manufacturing industry which on the mainland more than balanced the power of the feudal aristocracy. The rude and scattered peasantry had here a harder task, which, under Sambuccuccio, it brought to a successful issue.

We cannot follow our author step by step through his narrative, condensed and pregnant as it is, of resistance to invasion and tyranny. Its salient points are bright, its episodes are

are of romantic interest, but the page is unavoidably 'too much smeared with blood and dust' to invite transcription. Of all the oppressors under whom the island groaned, the Genoese were the most cruel, persevering, and successful. One episode of the struggle with that state we select as singularly illustrative of Corsican character. It concerns the life and adventures of Sampiero, a leader and hero of the sixteenth century. This extraordinary man was born A.D. 1498, in Bastelica, a village in the mountains near Aiaccio. Of obscure parentage and small means, like many of his countrymen in that day, he migrated in early youth, in search of military employment, to Italy. In the service of the Cardinal Hippolite de Medici he quickly rose to eminence as leader of the corps of Condottieri, known in Italian chronicles by the ominous name of the Black Band of Florence. He next found a wider field for his talents in the army of Francis I., in which he commanded a regiment of his countrymen. He became the friend of Bayard; and Charles of Bourbon was wont to say of him, that the Corsican colonel on a day of battle was worth 10,000 men. While thus acquiring distinction in foreign countries, he was not unmindful of his own. He returned home in 1597, and his reputation as a soldier supplying the place of titles and ancestry, won for him a noble bride, Vannina, daughter and heiress of Francis Ornano, a principal noble of the island. The Genoese, who were at this time in possession of the larger portion of it, had taken part against France in the great contest between that power and Charles V. The Genoese governor of Bastelica considered the soldier of Francis lawful prize. Sampiero was waylaid and flung into a dungeon of the citadel. Rescued by the influence of his father-in-law, he treasured up the wrong, and devoted his life to revenge it.

The first love (says a French dramatist) of a woman of
Aiaccio

Is like the strong hate of Ajaccio's men,
And Ætna's central fire a type of either.'

Corsican history affords ample illustration of the truth of both these assertions, and that of Sampiero specially confirms the second. We find him shortly after his liberation actively instigating Henry II. of France to the expulsion of the Genoese from the island. In 1553 a combined French and Turkish fleet, the latter under the famous corsair Dragut, with Sampiero and many other refugees on board, effected a landing near Bastia. The name of Sampiero roused the native population everywhere to arms. In a short time the Genoese were driven out from every stronghold in the island, with the exception of Calvi and

and Bonifazio. The latter, after a splendid resistance to the Turk, was induced by stratagem to surrender, and Sampiero with difficulty saved a few of its inhabitants from the perfidious and unsparing vengeance of Dragut. Calvi still held out, and to save this last position, Andreas Doria, at the age of eighty-six, unfurled in the cathedral of Genoa the banner of the state, and conducted a strong expedition to the gulph of San Fiorenzo. The old man's skill soon turned the tide of success, the more easily as Sampiero had quarrelled with De Thermes the French commander, and had gone to France to counteract the intrigues of the French camp. His return revived the struggle. His absence was defeat, his presence victory. While wounds detained him from the field, the Genoese captain, Spinola, defeated the patriots at Morosiglia. When he recovered and resumed his command, a bloody overthrow of Spaniards and Germans at the Col di Tenda was the consequence. For four years from the date of this battle (1554), the struggle continued with obstinacy, but with such a preponderance of success on the side of France and Corsica, that it required only a little perseverance on the part of the former to bring about that annexation of the island to her powerful protector, and that political separation from the Italian stem to which by origin and language she belongs, which has since been effected. The peace of Cateau Cambresis in 1559 destroyed this prospect.—‘*Ibi omnis effusus labor.*’—By one of its stipulations Corsica was abandoned to its worst enemy, Genoa. A groan of despair rose from the island, but despair was a word unknown to the vocabulary of Sampiero. For four years he wandered through the world soliciting aid from France and various courts of Italy. Failing in every Christian quarter, he betook himself to Barbarossa, at Algiers, and to Sultan Soliman, in Constantinople. The Genoese tracked his movements with ceaseless anxiety; snares were laid for his life without success; and the crafty senators devised a subtler scheme for striking at him through his best affections and neutralizing his patriotism by destroying his happiness as a husband and a father. During Sampiero's wanderings, his wife Vannina was living at Marseilles under French protection. Her eldest son Alfonso was at the French court, the younger, Antonio, with herself. Genoese spies and emissaries thronged around her. Among them was a priest, by name Ombrone, employed as tutor to the boy, and high in her confidence. This man and a subtle confederate unceasingly dinned in her ears the sad prospect to her husband, herself, and their issue, of a continuance of the struggle with Genoa. By taking refuge in that city, she would obtain at once the restoration of her children to a rich, ancestral inheritance,

inheritance, and the reconciliation of her husband himself with the republic would follow. He had toiled and suffered sufficiently for treacherous allies and a thankless country, and their latter years would be passed in the enjoyment of wealth, honours, and domestic happiness. She yielded, and prepared for flight. Before, however, she could execute the scheme, intelligence reached Sampiero, then at Algiers, of her intentions. His first impulse was to sail for Marseilles, but he was on the point of accepting the important invitation of Soliman to Constantinople, and he decided to send in his stead a tried friend, Antonio di San Fiorenzo. Antonio arriving at Marseilles, found Vannina's dwelling deserted. She had sailed only the day before for Genoa. He collected hastily a band of Corsicans, flung himself into a galley, and coming up with the fugitive near Antibes, arrested her in the name of the King of France. Brought back to France, she was offered the protection of a convent, but she was conscious of no failure in her love for her husband, and preferred to await his arrival and abide his resentment. Sampiero at length returned, and was met at Marseilles by Antonio and a relative, Giovanni di Calvi. In the conversation which ensued, the latter unadvisedly let fall that he had long suspected Vannina's intentions. 'And you were silent,' replied Sampiero, and stabbed him on the spot. Sampiero then took horse and galloped to Aix, where his wife awaited his arrival in the castle of Zaïst. Arriving after nightfall, he remained under the walls of the castle till morning. He then entered and summoned Vannina to accompany him to Marseilles. No word was spoken by him on the gloomy journey, no intention was announced by him; and friends who knew their former affection, still hoped for a reconciliation. When, however, he crossed the threshold of his abandoned home, the demon woke up within him at the desolate aspect, and he stabbed the wretched woman to the heart. Her obsequies were sumptuous. A Corsican chronicler says he loved her passionately, but his love was Corsican. We have given this narrative at some length, for it supplies the place of a host of illustrations of native character which might be gathered from the volume before us.

The remainder of Sampiero's life was one struggle with Genoa, principally maintained on his own resources. The court of France, though it took no pedantic objection to the murder of Vannina, kept aloof from Corsican affairs. The Genoese were principally led by Stephen Doria, who advocated towards Corsica that policy which Athens carried out towards Melos, the massacre of the entire adult population. The name of Napoleon occurs for the first time in history as one of Sampiero's brave
but

but unsuccessful adherents. At last, in 1567, the Genoese succeeded in ridding themselves of their indomitable enemy. He fell into an ambushade contrived and executed, as poetical justice demanded, by three brothers of the Ornano family, with whom the obligations of the Corsican Vendetta were stronger than the claims of their country. He died like a boar at bay, fighting to the last, and with his dying breath exhorting his son Alphonso to fly and reserve himself to revenge his father's death.

It would not be easy for a writer in the United States of America, however enamoured of republican manners and principles, to omit all notice of the institution of slavery. A treatise on Spanish history would be incomplete without some allusion to the inquisition. Corsica can boast of a system of self-inflicted torment, a misery which, though not, like these, incorporated into the written law, may take rank with either as an institution of the country. The unwritten code of the Vendetta has for centuries been the scourge and disgrace of the island. It was during the struggle of the sixteenth century that Sampiero's French ally, De Thermes, introduced into the island the firelock, a weapon which was ever after a ready instrument of lawless revenge. The habit of bearing arms of any kind engenders their abuse, but a deadly missile is a far more pernicious companion than a weapon like the knife, which requires proximity, some strength, and resolution for its effective use. A native historian calculates the assassinations committed between the years 1359 and 1729 at 333,000, but he also does the skill of his countrymen what we consider the injustice of supposing that the wounded who escaped with life may have amounted to as many more. We may question these figures, but the authority of Fillipini leaves us no reason to doubt that in his time the accomplished murders averaged 1000 per annum, and it is known that in thirty-two years of Genoese government, from 1653 to 1714, those recorded amounted to 28,715, and this in a population of 140,000. In many of these years there was not a single legal condemnation for the offence, if such it was reckoned. From 1831 to 1837 the administration of French law, aided by an active armed police, troops, and the guillotine, had reduced the annual average to 156, in a population of 260,000. In 1840 it had descended to 86. Yet even during these better times a man has lived for fifteen years without daring to cross the threshold of his barricaded house, and on leaving it after that interval has been shot down at his door. The possession of firearms is now strictly forbidden, and not a gun remains in the island. The prohibition

has

has been popular with all but sportsmen, for the natives find the advantage of being relieved from the terrible effects of their vindictive customs.

The Corsican practice appears to resemble in some respects, and to differ in others, from the system of assassination which in disturbed times and particular districts has occasionally been a disgrace of Ireland. We are not aware that in Corsica a man himself unconcerned in a feud can be hired, as such often have been in Ireland, to execute sentence on a victim. The Corsican revenges his own wrong or that of his clansman or forefather. On the other hand, like the Irish peasant, he has no feud with the functionaries of the law. The latter does not waylay the judge or the counsel on their way to Clonmel, though he well knows the object of their journey is the death of his near relation on the gallows. Neither are the armed police or military in either country, though frequently objects of bloody resistance, objects of Vendetta. In Corsica the *gens-d'arme*, who in fair fight has shot down or captured a criminal, pursues his functions afterwards without fear of vengeance. A wild sense of justice would seem in both countries to protect the man who has not overstepped the line of his acknowledged duties, or acted from private malice.

We might puzzle ourselves with a speculation on the value of prolonged existence under such conditions. We lean to the conclusion that it would be better to go out in the street and be shot. We can conceive at least nothing more doleful than the existence of a man destitute of literary resources thus incarcerated, in a state of society in which the arts of social intercourse are little cultivated, and with the sole resource of a dirge sung by his daughter in the evening. Health under such circumstances must become a curse, and fine weather seen through the loopholes of such a retreat a bitter aggravation.

Benevolent functionaries have exhausted in vain all endeavours to procure the reconciliation of families between whom a blood-feud of centuries had existed. In one of these instances an amiable Prefect had succeeded in bringing two together at a festival. It went off to all appearance well, but when the Prefect interrogated a patriarch of the village as to his opinion of the result, the old man shook his head. They met again in the morning, and the old man's face was cheerful. It appeared that a fray had occurred on the return home of the guests, and that a young man had been shot, whose death exactly balanced an account of mutual homicide. It has been found necessary to exempt a family from taxes, because an order had been issued
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by an influential bandit that no rents should be paid them. This occurred in the town of Sartene, where the municipality was also forbidden to use as a town-hall a house belonging to the Quillichini, the family under ban. The authorities after full discussion obeyed. A French writer, from whom we learn some of these details, records another occurrence in which religious feeling plays its part, for it must be borne in mind that the Corsican is a sound and rigid Roman Catholic. A priest had been detected in betraying the confidence attached to his function, and the honour of a family called for vengeance. The direct assassination of a priest was however not to be thought of. It was ascertained that his guilty rendezvous was attained by a nocturnal ride along a narrow mule-track on the edge of a precipice. A mule was flayed, and the fresh skin, with the inner surface upwards, placed on a critical passage of the track. The priest's mule, as was intended, lost its footing on the slippery snare, and rider and mule were found dead together in the abyss below. Our author's first greeting, upon landing on the quay of Bastia, was an account of a recent murder. Two days later his morning walk on the beautiful marine parade of that city was arrested by the aspect of the guillotine. The ghastly spectacle is explained in the following dialogue:—

‘ Who is to suffer ?

‘ The Braccia mozzo. The man with the lame arm. He is twenty-three years of age. The Sbirri have taken him in the mountains. He defended himself like a devil. They broke his arm for him. It has been cut off and he is well.

‘ What has he done ?

‘ Dio mio. He has killed ten people.

‘ Ten human lives ! and from what motive ?

‘ From capriccio.’

But this instance is not to be put strictly to the account of the Vendetta. The young criminal, without an injury to revenge, acted from the ambition which has led English apprentices to emulate Macheath and Jack Shephard. He had admired a famous bandit, and to qualify himself for similar eminence, committed a murder and took to the *macchio* or bush. In a state of society like that of Corsica, the best qualities degenerate into the worst vices. The Vendetta is closely connected with the love of family, which in the Corsican is only equalled in intensity by that of country, and is especially conspicuous in the fraternal relation. The island poetry is for the most part a dirge, a song of grief and vengeance for one who has died by violence. The words are usually put into the mouth of a sister, but even the widow in the climax of her grief often speaks

speaks of the departed as her brother. These female minstrels, and the female sex in general, have much to answer for in fostering and exasperating the spirit of relentless vengeance. The widow hangs up in the ancestral hall the clothes in which her husband fell, that her children may contemplate the rent of the knife or the perforation of the ball in the homespun brown cloth, or she sews a strip of the blood-stained linen into her son's garment as a memento of his duty to the dead. It is thus that in Borneo the women are the great obstacles to the noble efforts of Sir James Brooke, and one of the best of God's messengers on earth, the Rev. Mr. M'Dougall, for abolishing the strange practice of head-hunting. The plea of the young man, 'How am I to get a wife?' is difficult to answer. The most salutary operation of the Vendetta occurs when two bandits, standing under its relations to one another, take to the macchio in the same district. The Scotch proverb, 'Hawks will not pick out hawks' een,' is then reversed, and society is sometimes relieved on the homœopathic principle, *similia similibus curantur*.

Enough has perhaps been said to show that the story of Corsica is not a 'conte pour rire.' In one instance, indeed, the wildest romance of its history degenerates into the ludicrous. In 1736, at a moment when Genoa, assisted by Austria, was straining every nerve to quell the last embers of resistance, a ship, under English colours, anchored near Alexia. Some succours had been already received from private English sources, and the populace crowded down to the shore in expectation of further supplies of ammunition. They met on the beach a figure such as Bartholomew fair alone could match. A man of majestic gait and stature, dressed in an Eastern caftan of scarlet silk, Moorish trowsers, and yellow slippers; on his head a voluminous wig of the day, upon the wig a Spanish hat and feathers; a sceptral staff in his hand, pistols in his girdle, and a cavalry sabre trailing at his heels. This description, which is authenticated by engravings of the time, reminds us of the stage direction for the entry of Dorax in a famous scene of Dryden's play 'Don Sebastian':—'Enter Dorax, having taken off his turban and put on a peruke, hat, and cravat.' This strange vision was the Westphalian Baron Theodore von Neuhoff, a ruined gambler, who had formed, with much deliberation, and now for a while carried out with spirit and success, the strange conception of making himself king of Corsica. A mountebank, but no common one, he had been intimate with kindred spirits of his day of greater mark, Alberoni, Law, and Ripperda. He came not empty-handed. The ship which conveyed him was heavily laden with warlike stores, and even with considerable sums in hard coin.

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This quantum of material aid, eked out with unbounded promises and pretensions, had instant success. Public opinion was unanimous and enthusiastic. Few elected sovereigns have been more fairly called to a throne than Theodore the first, and last, of Corsica. He threw off with great spirit: offices, titles, and decorations were invented and distributed with a broadcast profusion, which would have stocked a court of Versailles or Madrid with chamberlains and dignitaries. He is said, however, at the same time to have been unsparing of his person both in council and the field, and to have answered the Genoese proclamations not only with much force and logic on paper, but with some hard blows in battle. Thorns, however, soon sprung up in the crown of oak-leaves, which a wise economy had substituted for more expensive regalia. A party, called the Indifferents, was formed, which was joined by his own prime minister, Hyacinth, father of the famous Paoli. After eight months of government, Theodore assembled his parliament to announce the necessity of his departure in search of reinforcements. With royal solicitude he appointed a regency of three grandees, to be assisted by no less than twenty-seven counts and barons of his own creation; and, embarking at Sartene, laid aside his theatrical attire, and landed at Leghorn in the disguise of an abbé. Within two years the indomitable adventurer reappeared, and this time with three large ships of war and supplies, which in the first instance might have sufficed to drive the Genoese from the island. Circumstances, however, had changed; more powerful invaders, the French, had meanwhile obtained a footing on the island, and this attempt, and a third, were totally unsuccessful. The close of the clever adventurer's career may be traced in the pages of *Peregrine Pickle*, in which Smollet's readers will find him a prisoner for debt in the St. Helena of a London gaol. Walpole headed a subscription for his relief. He died in 1756, in London.

The churchyard of St. Pancras, in that city, contains the dust of one who, with reference to everything but final success and the relative extent of his theatre of action, well deserves the name of great, Pasquale Paoli, the Washington of Corsica. Our limits forbid us to do any justice to his pure and noble career and character. It is enough to state that the free constitution which he devised and organized for his country anticipated by nearly twenty years that of the United States; and that among the first objects of his life were the suppression of the Vendetta and the education of his countrymen. It must be admitted that the principal objects of Boswell's idolatry were well selected.

Among the more interesting chapters of our author's volume we recommend one which describes his visit to Stretta, the birth-place

place and home of Paoli. It was here that, when he was expected from Naples to take the chief command in Corsica, his brother Clement fitted the windows with glass for his reception. Pasquale condemned the luxurious innovation by smashing them with his cane. Some may consider that this exploit savoured of claptrap, and that it would have been wiser in Paoli to have promoted the introduction among his countrymen of one of those appliances of civilization with respect to which Gibbon pronounces, that an English labourer enjoys a superiority over the Emperor Augustus, who had neither glass to his windows nor a shirt to his back. In these matters, however, the circumstances of the moment, and the character of an audience, make all the difference between claptrap and eloquence—between the ridiculous and the sublime. Some of Napoleon's proclamations, addressed to English soldiers, would have been bombastic failures; but they ran like fire through French ranks, and stimulated his men to great exertions and great sacrifices. These windows, which remain unglazed, command a magnificent view of the Monte Rotondo, the Mont Blanc of Corsica. Paoli's portrait, in which our author traces a striking likeness to Alfieri, hangs here in the room in which, in 1724, he was born. His wooden chair, and the table at which he wrote, clad in the woollen peasant's jacket, and surrounded by his large dogs, are preserved to bear witness to the simplicity of his habits. Paoli never married; his only recorded intimacy with the fair sex was one, intimate and lasting, but said to have been Platonic, with a lady of the noble house of Rivarola, a nun. She was a person of superior intellect, and much of his political correspondence was addressed to her. By natural vocation Pasquale was more addicted to politics and literature than to arms. He directed public affairs with singular talent, he founded schools and universities; but his brother Clement was the soldier of the family, the Joshua and Judas Maccabeus of Corsica. Both were religious, but Clement's life was passed between the cloister and the field of battle—between the most rigid monastic observances and the fiercest exploits of arms. He fought with the rosary in one hand and the musket in the other. His skill in the use of the latter was unrivalled, and every shot he fired was accompanied by a prayer for the soul of its object. Our author remarks, that, while Pasquale's prototypes may be found in Plutarch, those of Clement must be looked for in the Old Testament.

A few miles from Stretta the river Golo is spanned by the bridge of Pontenuovo, the scene of a fatal and decisive action, in which, A.D. 1769, the French, under Marboeuf, overthrew the Paolis and crushed the last effective resistance of Corsica. It is said

said that in 1790 young Napoleon passed some hours on this field in deep study of the ground. The father of Napoleon was much respected by Marbœuf, and it was to his protection, backed by that which it procured of the Duc de Biron, that young Napoleon owed his admission to the school of Brienne. It was, if we mistake not, this Duc de Biron who, by paying Rodney's debts at Paris, set him free to fight and conquer De Grasse in the West Indies, and who afterwards showed hospitality to Arthur Wellesley when a student at Angers.

It is our hope that the work of Mr. Gregorovius may obtain the compliment of translation, which we think it deserves. The chapters upon Aiaccio should be read in their integrity. We are unwilling to forestall the interest which attaches to their descriptions of the scenes of Napoleon's youth, and the anecdotes, which with great diligence their author has collected on the spot, of his Corsican education and adventures. They are pregnant with evidence of his early inclination for arms and for despotic command. One anecdote we select as new to ourselves and as favourably illustrative of his character. The last occasion on which he trod his native soil was on his return from Egypt in 1799. It was on the 29th of September in that year that he put into Aiaccio. He at first remained writing in his cabin and declined to land, but yielded to the wishes of Berthier, Eugene, Lannes, and others who desired to inspect the birthplace of their commander. A few years only had passed since he had walked those streets as a private citizen, or more proudly at the head of a militia battalion, to which he had been raised after a fierce struggle with rival factions. On one occasion a shot fired from the other side of a street had narrowly missed him. It was notorious that the hand which pulled the trigger was that of a priest. They now met and recognized each other. The priest was hastily retiring, when Napoleon overtook him and gave him his hand. Although he had landed with reluctance, he stayed six days on the island, visited the villa in which much of his youth had been passed, and stood the brunt, sometimes hard to bear, of the raptures of his nurse, on whom he afterwards bestowed a pension. The memory of Napoleon is in disrepute in Corsica for having neglected it during his greatness. The charge as regards the island is true. He showed no recollection of it in the way of endowments, monuments, or public works. From passages in that most valuable publication, his correspondence with Joseph, we infer that he had no great value for the Corsican peasant as a soldier, and he certainly valued peasants for little else. The list, however, of his countrymen whom he employed and promoted in

various capacities is not inconsiderable. A companion of his earliest fortunes, Colonna, was intimate with him to the last. He was the first confidant of the projected escape from Elba, and to his care Napoleon in his will recommended his mother Letitia. Antomarchi, Napoleon's physician at St. Helena, was a Corsican; and from a Corsican priest, Vignale, subsequently assassinated in his native island, he received extreme unction.

By one early and eminent rival, Pozzo di Borgo, Napoleon was pursued through life with Corsican tenacity of hate. The diplomatist did not forget his country in his elevation to influence and wealth. He was liberal of the latter to local institutions, and a splendid edition of the Corsican historian Filippini was published at his expense. These good deeds did not protect his nephew from the Vendetta, which was said to have been justly incurred. He was dragged from his carriage at noonday, near Aiaccio, and shot by a relative of a girl whom he had seduced.

The commercial policy of France towards the island appears to be based on the detestable principles which formerly governed that of England towards Ireland, and to be as effective in depressing industry and encouraging the natural indolence of the inhabitants. The wines of France, for instance, are admitted duty free, while those of Corsica and other products, such as tobacco, are contraband in France. We may well credit our author's assertion that fifty-eight years of French domination, however preferable in many respects to that of Genoa, has not reconciled Corsica to her present rulers. Still less has it produced any assimilation between the two uncongenial races which it has brought into contact; the stern and melancholy islander, sparing of the beautiful language which he speaks with great purity, and the lively and voluble Frenchman who pines for the cafés of Paris, like Seneca, detests the savage beauties of nature, and considers Corsica an abode of penal exile. The memory of Napoleon is honoured in one sense as that of the man who overthrew the power and liberties of Genoa and subjugated France; but if our author is to be believed, Paoli is, as he deserves to be, the hero of the island, and his defeat at Ponte Nuovo, to native apprehension, the darkest spot on the page of her annals.

Corsica, like England, has contributed one occupant to the papal chair, Pope Formosus of the ninth century. In the sixteenth century, one Lazzaro, a renegade from Bastia, became Dey of Algiers. In the present a Corsican woman has been Empress of Morocco. One of Napoleon's ablest and most respected generals, Sebastiani, was his fellow countryman, as

was Casa Bianca, who, with his boy, stood and perished on the burning deck of the *Orient*. Upon the road which leads from Bastia to San Fiorenzo, Bernadotte worked as a common soldier, and thought it high promotion to be made a corporal and direct the manual toil of others. Here, too, he fell in love with a peasant beauty of Carolo. She who might have been a queen, was pointed out to our author engaged in the Homeric occupation of carrying water on her head from the public fountain. Calvi still asserts a claim to have been the birthplace of Columbus. The Genoese extraction of the family is admitted, but it is maintained that it was here that it had settled. Napoleon while at Elba directed some inquiries into this matter. There is a Colombo street in Calvi, and some inhabitants of the name, and a tradition that men of Calvi were the first Corsicans who sailed for America. It is affirmed that the Genoese seized and suppressed the archives of the family. In Corte flourished the Cervinis, a race of gallant men. One of these, Thomas, though at feud with Paoli, rescued the latter when besieged in the convent of Alando. His son was Napoleon's companion-in-arms at Toulon. He became commandant of Rome, was the terror of the Pope, and, as good Catholics may fairly assume, expiated his unceremonious behaviour in losing his head by a cannon-shot at Ratisbon.

The atmosphere of Corsica has not been one in which literature, art, or science, could be expected to flourish. The periodical press of the island now produces two weekly newspapers, one published in Bastia, the other in Aiaccio. A library of 16,000 volumes exists in Bastia, in a building formerly occupied by the Jesuits, who founded the collection. Our author furnishes a list of names of recent local literary reputation, principally for works on history and jurisprudence. Of these, Gregori, a Bastian, who died in 1852, president of the Lyons Academy of Sciences, appears to have been the most eminent. He left an unfinished work on Corsican history, and superintended an edition of the Corsican Thucydides, Filippini. This classic work, which consists of a history and description of the island, in thirteen books, was published in 1594. The last four of these books are exclusively his own; the preceding are avowedly a compilation from several older writers. At Vescovato the house is shown in which he resided as archdeacon, and the vineyard in which he was wont to compose, under the protection of its ball-proof walls, for the worthy ecclesiastic and historian lived under ban of the Vendetta. The excitement of danger may perhaps have lent vigour to a Corsican pen. We doubt whether any advantage would accrue to English literature, if Mr. Hallam were to

write under fear of any worse enemy than a reviewer, or if Mr. Macaulay were reduced to barricade his chambers in the Temple. The circumstance is the more remarkable, because the archdeacon waxes very wroth with an Italian writer, who accuses the Corsican of homicidal habits. 'Is there,' he writes, 'a country in the world in which a stranger is more hospitably received or travels more safely?' Three hundred years have not, as we believe, impaired the truth of this plea, which, however, with all respect, is and was no answer to the charge. Like Johnson, in Garrick's case, Filippini would not allow others to take liberties with his countrymen, but he is in other passages unsparing in his own censure of their vices, their indolence, their indulgence of revenge, their restless love of novelty, and their superstition. Seneca's distich was hardly more severe—

Prima est ulcisci lex, altera vivere raptû,
Tertia mentiri, quarta negare Deos.

The first address of Napoleon to Antomarchi, on the arrival of the latter in St. Helena, was—'Have you a copy of Filippini?'

Our author makes no pretensions to acquirements in natural science. The ample information which his volume contains, as to the geology and natural history of the island, is due to an acquaintance which he made at Bastia with an accomplished Florentine refugee and ex-colleague of Guicazzi, Francesco Marmocchi. Among other works which this gentleman has published, is a physical geography of Corsica, of which our author speaks highly. Metallic wealth appears to be denied to the near neighbour of ferruginous Elba. Its mines are few and of small account. On the other hand, in marbles, granites, and porphyries, it is inexhaustible. Climate, geographical position, and formation, are alike favourable to a rich and various vegetation, ranging from the palm and the cactus to the pines which flourish on the frontier of perpetual snow. Our author considers that nothing but more skill and industry than are now rife in Corsica, is necessary to make it a source of supply to France of many articles of West Indian produce, tobacco, cotton, sugar, and indigo. Seneca records in an epigram the non-existence of the olive in his day in the island. In dimensions and fertility the Corsican olive has now few rivals. In 1820 a census of its numbers was attempted. They were estimated at twelve millions. The date of its introduction is uncertain, but the variety most cultivated is said to have been imported by Agostino Doria. It is fruitful to the height of 4000 feet. The chesnut is productive some 2000 feet higher. The wild vegetation of Corsica is of that richly odoriferous character described in Milton's immortal lines, and which so often regales the senses of the Mediterranean navigator,

navigator, as well as of him 'who now has reached Mozambique.' Napoleon at St. Helena said that he should recognize his native island by its peculiar perfume if he were transported thither blindfold.

The island is fortunate in its immunity from the wolf. The fox, however, having an undisturbed sovereignty, becomes strong and insolent, and scarcely less destructive to the flocks in the lambing season than the wolf. The mountain sheep still haunts the granite peaks of the Monte Rotondo and other summit ranges. We are not aware that it exists elsewhere in Europe, unless it should be found to co-exist with the bouquetin and chamois in the mountains of Candia. Serpents are few and harmless; but there is a spider, the bite of which is reputed dangerous and even fatal.

We cannot doubt that French rule, with all its faults, and with the manifest injustice of its fiscal regulations, has done much for Corsica. The present ruler of France, with a stroke of his pen, might do much more for the country from which he claims his descent. His intelligence and decision of character could hardly display themselves in a more graceful act than the simple admission of Corsica to the industrial and commercial privileges enjoyed by their fellow subjects of the mainland.

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- ART. X.—1. *The Conduct of the War. A Speech delivered in the House of Commons on Tuesday, 12th December, 1854. By the Right Hon. Sidney Herbert, M.P. London, 1854.*
2. *The Prospects and Conduct of the War. Speech delivered in the House of Commons on December 12, 1854. By Austen Henry Layard, Esq., M.P. for Aylesbury. London, 1854.*

NEARLY two years have now elapsed since the majority of persons who had carefully investigated the Eastern question exclaimed against the blindness and apathy of the Government, against their unreasonable expectations that they could secure peace, and their want of energy in preparing for war. What had long been palpable to enlightened politicians became apparent to the entire country after the frightful hazards of the day at Inkerman; and for three or four weeks nothing was to be heard except the language of indignation and alarm. The pressing danger was removed, and the public, always far too prone to judge by events, have passed over more lightly than we can do ourselves the thoughtlessness which brought our entire army before Sebastopol to the very brink

brink of destruction. The ministers have been heard in their defence, and, singular to relate, every circumstance which they have opposed to the principal accusation is a confirmation of the charge. 'He was ready to admit,' said the Chancellor of the Exchequer, 'that what was to be expected from those entrusted with the political operations of the war, was not that they would be able to stand a minute scrutiny in every point of detail, but that their general measures should be taken to have been dictated by wisdom and prudence.' The same sentiment was uttered by other members of the Cabinet, and the question could be put upon no fairer issue; but the ground which the ministers have selected upon which to take their stand is precisely that which sinks beneath them upon the slightest pressure.

The remissness of the Government during the early part of the dispute has been forgotten in the excitement of subsequent events. Without recapitulating the numerous errors which they successively committed, it is natural to revert to the amazing inertness they manifested, now that we are feeling the effects of it. Lord Ellenborough, who has displayed throughout these transactions a singular knowledge and sagacity, stated in the second of his very able speeches on the 'Foreign Enlistment Bill' that he had warned one of her Majesty's ministers so far back as April, 1853, that war must come, for that he was convinced the Czar would never depart from his demands. In April, there were many who still indulged in the belief that the quarrel would be amicably settled; but on the 3rd of July the Russian army crossed the Pruth, and from that hour it was evident that the Czar was too deeply committed to recede. He had thrown down the gauntlet, and nothing remained for us but to take it up or submit to the aggressor. The Vienna note followed, and appeared, it is true, to promise a momentary success, which was solely due to the ambiguity of the language employed. It was an evasion, and not a settlement, of the dispute; and on the 27th of September the Porte declared war against Russia.

Ministers, said Burke, are placed upon an eminence that they may command a more extended horizon. Ours took up their position in a hollow, and, gazing upwards at the stars, indulged in dreams of serenity and peace. If their sluggishness in making those preliminary preparations which would have enforced the arguments of their diplomacy, was unwise before, it was little short of insanity when the fray between the principals had actually begun. The autumn of 1853 should obviously have been a period of superhuman exertion in raising and training levies for the field. Nor can we believe that a Cabinet of which Lord Palmerston and Lord John Russell were members—men who did not use to be

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be wanting in promptitude and decision where the honour and supremacy of Great Britain were concerned—could have sat month after month with folded arms if the more far-seeing and spirited part of the Government had not been paralysed by the Arcadian policy of their chief. That Lord Aberdeen is an amiable, and, in some respects, an able and well-informed nobleman will not be denied; but of all existing politicians he was the very worst which could have been selected for an European crisis. Conciliation, which is an excellent peace-maker where all the parties are animated by motives of equity, is one of the most dangerous of qualities, unless united with invincible firmness, when dealing with the demands of unprincipled ambition. The most common—we will not say the invariable—characteristic of the foreign policy of Lord Aberdeen has been the refusal to push a threatening difference to extremities; to be content with verbal understandings when the sole security was in written pledges, or else to be satisfied to oppose remonstrance to action. In all the stages of the Eastern question, up to the breaking out of the war, his life-long habit was apparent; and had not the public possessed a spirit and determination greater than his own, he would, we are convinced, have continued as he commenced—attempting to untie the knot with his fingers until the Czar had cut it with his sword. Forewarned as he was above all by the Czar's private confidence, he almost alone was not fore-armed. There might have been no great cause to complain that the efforts to secure peace had been protracted after reasonable hope had died away, if the negotiations had been accompanied by the only thing which would give them effect—a preparation for war upon an adequate scale, by land no less than by sea. But while so little activity was shown in recruiting the army, and in organising the commissariat and means of transport, that we could hardly appear to be in earnest, the imprudent language of Lord Aberdeen confirmed the impression that at the last we should rather make concessions than fight. When he touched upon the differences, he had nothing wiser or more momentous to tell than that he wished for peace! This languid iteration, puerile if it had not been mischievous, was the burden of every speech, and gave the Czar no slight ground to believe that if he pushed forward his armies, the gentle shepherd at the head of the administration would come forth to meet him bearing an olive-branch in his hand. So passed the precious months of the autumn of 1853 and the winter of 1854 away. Does any man, except the Chancellor of the Exchequer and his colleagues, think now that the inaction was 'dictated by wisdom and prudence'?

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How soon her Majesty's ministers came to see with the eyes of the rest of her Majesty's subjects does not appear, but we know now from their own declarations that they had lost all hope of peace when the Guards were embarked for Malta on the 20th of February. On the 3rd of March 15,000 additional soldiers were voted, and on the 28th war was declared. The first requisite was to provide forces for the contest, and Mr. Sidney Herbert told the House of Commons on the opening of the present session of Parliament that our troops had been so reduced by the improvident economy of successive governments, that an army had to be created.* The Duke of Newcastle acknowledged more than once during the discussion on the 'Enlistment of Foreigners Bill,' that it required six or seven months' training to make a recruit an efficient soldier. A government thus impressed with the twofold conviction that they had an army to create, and that half a year must elapse before the first recruit they enlisted would be ready for the field, would, we may take for granted, devote every energy to repair the deficiency and atone for the evil consequences of their own delay. How far this was the case may be gathered from what was said by the Duke of Newcastle during the debate on the Address. 'At the first declaration of war recruits came forward freely, but they soon relaxed, *and during the summer months they were few indeed in number—so much so as to cause very considerable anxiety on the part of the government.*' He ascribed the falling off to the then comparative stagnation at the seat of war, but no sooner was it known that the siege of Sebastopol was likely to be protracted and to afford full scope for hazardous enterprise than again the recruiting trade was in the ascendant. 'Week by week it has been progressing, until last week, I believe, we more than doubled the number of any previous week since the commencement of the war, and enrolled six or sevenfold the number which we had the power of recruiting some five or six weeks ago.' That there is some truth in this theory we do not at all question. It is actual fighting, and not marchings and countermarchings and listless encampments, which forms the attraction to men of a martial temperament. But there was, we suspect, another and less chivalrous cause at work in bringing such an unwonted crowd of recruits to the aid of the country in the week between the 3rd and the 10th of December. The Government, alarmed into unwonted exertion by the battle of Inkerman, had offered in the last week of November an augmented bounty to the militiamen

* The Coalition Ministry were indebted to the government of Lord Derby for the militia and the war-steamers, without which the war could not have been carried on at all.

who should volunteer into the line, besides placing an ensigncy at the disposal of their commanding officer for each set of seventy-five volunteers. Ministers anticipated that their bounties and ensigncies would operate as an inducement, as well as the prospect of a stirring campaign, or they would not have proposed them. But why then did they wait till the army was imperilled and the country drained of troops to offer the stimulus of a further reward? Why did they not apply the remedy 'during the summer months, when the recruits were few indeed,' and the Government was oppressed in consequence by 'considerable anxiety?' They had engaged in a tremendous struggle, and, by their own confession, had an army to create. Was it 'wise and prudent' to let the summer months slip away without furnishing their contingent, or would it not have been more wise and more prudent to have gone on raising the bidding for recruits until men were obtained?

The militia is the grand magazine from which our active troops are replenished in war, and the Government which felt that they had an army to create did not ask leave to bring in a Bill for the embodying of this force till the 3rd of May. On the 6th of February Lord Palmerston announced that the militia force would be organized in Scotland and Ireland, and when the Duke of Newcastle is asked in the middle of December why no steps had been taken to effect in March or April an object which had been determined on in February, he answers that Parliament did not confer the power till the summer. In other words, the Ministers who had declared war, and were sensible that they had to create an army to carry it on, 'in their wisdom and prudence' allowed months to elapse before they proposed this pressing, this vital measure. Until Parliament was called together on the 12th of December there was but one method of explaining the conduct of the Government. It was supposed that they had limited their notions of a first campaign to the pitiful project of awaiting the enemy at the gates of Constantinople, and that they had been forced by the sudden retreat of the Russians and the clamours of the public to engage in schemes of unexpected magnitude. But this is an apology they have disdainfully rejected. From the very outset, we are exultingly told by the Duke of Newcastle, they had made up their minds to the attack on the Crimea. In planning the expedition, they had not, moreover, been misled by the common opinion that the enemy was less formidable than was supposed before he had been foiled in the trial of arms with the Turks. Mr. Sidney Herbert claims to have been prophetic on the point. The public, he said, had chosen to assume that the Russian power was waning if not extinct, but

but he himself, in the last session of Parliament, had been reproached for maintaining, what events had verified, that the army of the Czar would defend their country with their old tenacity. Having framed so vast a project, and being thus conscious of the array of might which would be required for its execution, they could yet put off from month to month the most essential measures for providing the very staple of war. Their excuse is their condemnation. The more they take credit for being wide awake to the danger, the more culpable they become for dozing at their post.

That the Government conception of the arduous nature of the contest was much larger than their preparation for it we readily admit; but notwithstanding their boast that they had taken an accurate measure of the crisis, there is abundant evidence that their views fell exceedingly short of the truth. The whole of the reinforcements sent out from June to the close of the year amounted, according to the Duke of Newcastle, to 20,000 men, or rather less than 3000 a-month. Of these, 12,300 were despatched in November alone, and a large proportion of them under the pressure of the alarm created by the news of the battle of Inkerman. So far was the Government from having anticipated even such a demand as this, which exhausted their reserves, that the Duke of Newcastle confesses that a considerable portion of the force consisted of imperfectly trained recruits, whom he had intended to keep back for the next campaign. Our original army was small, and it was not only gaps in the existing ranks that we had to fill up, but we had to swell our contingent to dimensions more commensurate with the resources of the country and the power of the Czar. What ideas could Ministers have framed of the colossal strength of Russia when, in furnishing 20,000 troops for this double purpose, they had to include the recruits whom they never dreamt could be wanted until the next campaign? Professional men are agreed that the entire force sent out to the Crimea is still inadequate for the siege of such a fortress as Sebastopol, and it is difficult to comprehend the infatuation which could set at defiance all the ordinary calculations of military science. Hardly any limit can be put upon the results which may accrue from occasional feats of heroism, from effects of panic, or the accidents of war; but as no ruler of a great country would place the slightest dependence upon such desperate chances unless in the extremities of despair, the data upon which the Ministers based their calculations remain an enigma to this hour.

The reinforcements they did despatch were sent out with a slowness which, but for the unparalleled exertions of our heroic army,

army, would have left every man of them a prey to the sanguinary ferocity of their brave but brutal enemies. For this the Duke of Newcastle offers a threefold excuse. He says that before the battle of Alma six or seven thousand troops were under orders to sail for the Crimea, but there were not sufficient transports at home to convey them to their destination. If the Government had no vessels in September, was it not possible to have concentrated a reserve at Malta or Gallipoli in the months of July and August?—or if they had been as sensible of the necessity of the precaution as they became after Inkerman, and had made equal exertions, might they not have collected at any moment out of our vast marine some means of carriage? It is notorious that they could; and the true cause of the negligence is to be found in the second and third apologies of the Duke. ‘We did not,’ he says, ‘expect that a Russian army could be moved from Odessa to Sebastopol with the marvellous rapidity with which that movement was effected.’ This only proves that the Czar knows how to wage war, and that the Duke of Newcastle does not. To make unwonted exertions, to execute movements with unlooked-for celerity, to bring an overwhelming force upon the enemy before he can gather together his legions to meet it, has been part of the tactics of every modern commander of eminence. The Duke of Newcastle thought that their Lordships would be surprised to hear, that by means of cars the Russian troops had been carried forty-two miles in a single day. When will the Duke on his part display an energy which will surprise the Czar? Instead of quoting the quickness of the Russian movements as an apology for the slowness of his own, he ought rather to have blushed that the enemy were so much more diligent in collecting cars than the English Minister of War in securing a convoy of ships. His final argument in extenuation of the delay is, that Government believed Sebastopol would have fallen long ago. To hope, to expect it even, might be excusable, but was it ‘wise or prudent’ to take it for granted? and to make little or no provision for the possible, nay the probable, contingency of its holding out? They knew it to be one of the strongest fortresses in Europe; they expected the Russians to defend it with tenacity; and it required neither military science nor statesmanship to discover that the Czar would strain every agency at his command to retain this keystone of his power in the East. Every motive of interest and pride impelled him to send division after division while the road was open and a soldier could be spared—to exhaust almost the empire to save the Crimea, and with it his prestige, his navy, his arsenals, a large part of all which made him great and dreaded throughout the territories washed by the waves of the Euxine.

Euxine. The only secure policy on our part was not merely to rival but to surpass the Czar in such self-evident tactics, and to go on concentrating the means of attack in a greater ratio than he could accumulate the means of defence. The time to stop is not while the struggle is pending, but when the end is gained.

Soldiers are useless without equipments; and when the 20,000 men were embarked in the spring they were so scantily supplied with the materials of war, that the notion was confirmed that they were to await the enemy in the trenches of Gallipoli. But the Ministers had contrived a campaign of a more adventurous kind. 'They had,' says Mr. S. Herbert, 'a distinct plan, which was—first, to secure the Dardanelles; next, to defend Constantinople; next, that capital being safe, to defend the lines of the Balkan; and lastly, to be ready to attempt to strike a blow at some vital part of the Russian empire.' Yet the army which was to accomplish these vast designs was utterly without the means of transport; and when it arrived at Varna was as incapable of moving against the enemy as the ground on which it trod. The siege of Silistria was raging, and it was universally supposed that the place must fall unless it was instantly relieved. No means of locomotion existed in Bulgaria, none had been provided, and our soldiers were in consequence condemned to inaction, while every day they were expecting to hear that the fortress had been taken. 'I had warned the Government,' says Mr. Layard, whose political views we do not share, but who, it must be admitted, has shown upon this question a prescience worthy of his singular knowledge of Eastern countries and affairs, 'that our army would find no means of transport in Bulgaria.' But though they had a 'distinct plan,' in which waggons were as necessary as swords and muskets, this 'wise and prudent' Ministry were deaf to counsel, and made no attempt to supply the want.

In many other respects the army was deficient in the necessary equipments. In military stores as in men there has no doubt prevailed under various administrations, as Mr. Sidney Herbert alleges, an imprudent economy. For nearly a twelvemonth before the war broke out, it was, to say the least, no unlikely contingency. A man so sensible of the dangerous poverty of our arsenals even for a time of peace, and who saw the possible demand that might be made upon them, might have been expected to avail himself of the opportunity to accumulate materials which in any case he maintains to have been needed. From the spring of 1853 to the spring of 1854 we should suppose him incessantly occupied in remedying the defect; and the only valid defence he could have made for himself, and the Cabinet to which he belongs, would have been to show that they did as much as
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men could do in a single year—that they asked of Parliament ample supplies, and that they spared neither pains nor expense in filling up the voids at Woolwich, Portsmouth, and Plymouth.

But whatever else was lacking, the Government could boast that in one thing they had been bountiful to excess. Lord Granville feared to tell his auditors the quantity of ammunition which had been shipped, lest the statement should sound like the tale of Baron Munchausen. That he might not put the credulity of the Staffordshire yeomanry to too severe a test, he was satisfied with saying that it was sufficient to wear out the 60 heavy guns which accompanied it. Wonderful to add, the earliest want felt was the scarcity of ammunition, and we learn from the speech of Mr. Layard, ‘that had we continued the fire we opened the first day, and which barely sufficed to keep down that of the enemy, our ammunition would have been exhausted in six days.’ The batteries in consequence had not been a fortnight at work when an order was given that each gun should be discharged only twenty times per diem, or once in every half-hour. Even with this excessive economy the firing had not continued three weeks when, as we read in the letters of the correspondent of ‘The Times,’ we had consumed a large part of a second supply of ammunition, nearly equal to that which had been originally despatched. When it is remembered that at the siege of Valenciennes in 1793, the allies kept up an incessant firing for *six* weeks from *four* times the number of cannon which the English have placed in position before Sebastopol, it is evident that the amount of powder and ball which staggered the imagination of Lord Granville must have been exceeding moderate, and might safely have been specified without endangering his character for veracity. Far different from the conceptions of the Chancellor of the Duchy of Lancaster are Russian notions of what constitutes a well-filled magazine. Though they have considerably more cannon and of heavier metal than the French and English combined—though they have suffered more from explosions than ourselves—though they had been drawing upon their stock for days before we discharged a shot—and though they fire furiously at hours when our guns are silent—they as yet practise no economy and fear no exhaustion. ‘I have no hesitation in saying,’ wrote a French officer as early as the 4th of November, ‘that since the invention of gunpowder there never was so much wasted before.’

The stores which were sent were rendered unavailing through mismanagement. A complaint was made, which excited great indignation, that the sufferings of the wounded soldiers were exasperated from the want of lint. It was understood that the Government pronounced the rumour to be a calumny, the public
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were discouraged in their design of supplying the deficiency by private charity, and were told that their minds might be at rest upon the subject. Miss Nightingale sailed with her devoted band, and on her arrival found that the charge was not only true, but though weeks had elapsed nothing had been done to remedy so cruel a neglect. Now, we are informed by the Government that 36 acres of lint were shipped from England, but the lint was consigned to Varna and the wounded to Scutari. Orders were given that the stores should be removed from the former place to the latter at the time when the army embarked for the Crimea; 'but,' says Mr. S. Herbert, 'that order, in the hurry and bustle of departure, was never executed.' Who then is the delinquent that receives such pressing orders and neglects to execute them? or were the orders given and the means to execute them withheld? Is no one to be responsible for such misdoings, and is it enough for Ministers to dismiss a neglect which caused enormous suffering, and lost numerous lives, by simply pleading 'hurry and bustle?'

In another instance, the little consideration which was shown in securing the commonest care for the men who were the victims of a battle fought for the benefit of their country is really aggravated by the defence which has been offered by the Government. It has been often asserted, and Mr. Layard told the House of Commons that he was a witness of the fact, that many of the wounded after Alma were left for two nights on the field, while our allies immediately collected and relieved their disabled comrades. 'The French army,' retorts Mr. S. Herbert, 'took fewer men than we did, and carried their ambulances,' which is equivalent to saying that the French were considerate, and that we were not, that they held ambulances to be an essential part of their equipage, and that we could tamper with the lives of our soldiers to avoid the incumbrance of extra baggage. No stranger specimen of parliamentary logic could anywhere be found than this attempt to explain away the disadvantageous contrast by alleging that the French had been provident and we had been reckless. Nor, as we have touched upon the subject, will it be amiss to add from the speech of Mr. Layard another circumstance connected with these ambulances, which, in the language of the honourable member, 'illustrates' the manner in which the Government has managed details during this war. Instead of young and active men having been sent out to attend the wounded, old pensioners, who, after long service, had retired to pass the remainder of their days in the sanctum of the public-house, and most of whom were suffering from *delirium tremens*, were selected. They were expected

pected to take charge of mules—animals of all others the most difficult to manage, and what they had probably never seen before. The result was that the woods about Varna were soon full of wild mules and fragments of harness, the pensioners were found dead by the road-side, and the ambulance corps became perfectly disorganised and useless.’ The same want of discretion and system has been manifested throughout. No one will have forgotten the description by the correspondent of ‘The Times’ of the reckless waste and confusion which disgraced the harbour of Balaklava, and we could fill pages with statements of similar thoughtlessness and incapacity, derived from published accounts and private communications. The Government were called upon to make timely exertions to put a peace establishment upon a war footing, and they neglected to do it. They had men to recruit, they had stores to provide; they began the work late, and when it was commenced their exertions were fitful. The soldiers collected, they had to make a wise distribution of them—to have an army in the field, a reserve at Malta or Gallipoli, and regiments of recruits in training at home. The reserve was small and retained in England, the reinforcements were delayed till we had narrowly escaped a terrible defeat, and when the recruits fell off in the summer the alarmed Government took no effectual measures to attract them to the service. The stores had to be shipped betimes, to be conveyed to their destination, to be placed under the control of responsible authorities to be regularly dispensed and carefully husbanded. A vast number of them on the contrary were tardily sent; and because no thought had been taken for the supervision of them after they left our shores, they miscarried, they were lost, they were spoiled, they were left behind, they were even overlooked, and brought back in the hold of the ship which took them out, or being conveyed to the spot where they were to be used were piled up or hid away like so much lumber. What, then, are the ‘general measures’ of this Cabinet, which the Chancellor of the Exchequer assures us ‘have been dictated by wisdom and prudence?’ Neither he nor any other member of the Government has yet ventured to name them; and when it is demonstrated that army and equipments, men and *matériel*, have all been neglected and grossly mismanaged, it is mere hardihood to reply that Ministers do not profess ‘to be able to stand a minute scrutiny on every point of detail.’

The gist of the charge against Ministers was admirably summed up by Lord Derby in his powerful and eloquent speech on the first night of the session. ‘My complaint,’ he said, ‘against the Government is this, that they have from the commencement,

mencement, and before the commencement, of the war, lived, as it were, from hand to mouth ; that they never anticipated in due time the contingencies of the struggle in which they were about to engage ; that they never considered the greatness of the undertaking upon which they were entering ; and that they never made adequate and timely provision to meet, not the contingent exigencies of the day, but those exigencies which the fortune of war rendered inevitable.' When a crisis arose, the Ministers were active ; they were active in despatching troops in the spring, when at last they discovered that we must fight ; they were active in sending out reinforcements after Inkerman, when they saw that the army was on the verge of annihilation ; they were active in endeavouring to obtain recruits when they found that the reserve was about to embark, and that our dépôts were drained. But these are the qualities of a clerk, and not of a statesman. It is within the capacity of the lowest official in the War Department, with unlimited funds at his command, to issue orders when the want is specified, and he has united England to tell him what to do. What is expected in men who assume to regulate vast and complicated transactions in an hour of peril is that mental sagacity which can anticipate wants ; that wisdom which can contrive the means of supplying them ; that administrative ability which can organise agents to carry into effect the intentions of their superiors ; and in all of these points the failure has been complete. Never were any set of men at the outbreak of a war in so advantageous a position. Domestic difficulties they had none whatever ; the country, with hardly a dissentient voice, practically placed the whole of its resources at their disposal, and urged them to use the confidence, without stint or measure, for the public benefit. But the power of England is nothing better than a name unless it is brought to bear upon the scene of action ; and this duty, which is the only one they have had to perform, has proved beyond their strength.

Where the mistakes have been so capital and glaring, the little which Ministers have effected is no set off against the much they have left undone. In a struggle of life and death those who assume the responsibility of conducting affairs must display a prescience and an energy commensurate with the magnitude of the stake. It is a prerogative of superior minds to rise with the occasion, and the men who seize upon the post of honour must show themselves worthy of it or incur a censure as overwhelming as the calamities they cause. Until a second Minister of War arises as great as himself, the first William Pitt will be the standing example of the victories which a master intellect secures by providing the means for them. Never since has the power of Great Britain

Britain been in the hands of a civilian who had the strength and skill to wield it. Yet if his genius is not hereditary, it is still possible to imitate the general principle upon which he proceeded of developing the entire force of the country and directing it against the enemy.

But will the Ministers, profiting by experience, act upon past warnings and make ample provision for future emergencies? Constituted as the Government is at present, we have not the slightest hope of any such result, for the very nature of their errors betrays an utter ignorance of the first principles of war, and an obliviousness of the most obvious wants of an army. Their latest proceedings with reference to the supplies which have been forwarded to the Crimea are of a piece with all which has gone before. 'The want of clothing,' writes the correspondent of 'The Times,' 'the want of fuel, the want of shelter, the want of food, which have cost the army and the nation so dearly, might, I sincerely and solemnly believe, have been obviated by a small exertion of ordinary *prévoyance*. The articles which are arriving to-day (December 4) in the Belgravia should have been here long ago, and the supplies we are expecting daily, however welcome, are late. They will be of service only to those who have survived, or have maintained health and strength under cold and wet. We have tents, but cannot get them up to the camp. There is a great deficiency of hospital marquees; and, horrible as it is to think of such a thing, it is no less true, that according to information received from no doubtful source, five men of a battalion of the Guards were found dead outside one of the tents within the last thirty hours.' Precisely a week after these Guards had perished from want of shelter, Mr. S. Herbert was triumphantly declaiming in the House of Commons upon the alertness he and his colleagues had shown in providing that shelter for the lack of which so many brave soldiers had already died. 'Then with regard,' he said, 'to providing huts for the troops, what have the Government done? *They felt that, in this particular, time was everything.* To have them built here at home, and then send them out to the Crimea, was felt to be a process that would occupy much too long a space of time; *but the moment the requisition for huts arose*, we telegraphed to Lord Westmoreland at Vienna, and to Lord Stratford at Constantinople, desiring them to send out instantly such huts as they could have constructed in those countries.' 'They felt that time was everything,' and not a hut had arrived up to the middle of December! The next sentence explains the anomaly: according to their custom, they did nothing till 'the requisition for huts arose.' Well might Lord Grey observe that the necessity of providing for the wintering of the troops ought to have been foreseen, and the measures taken months before;

before; that even if Sebastopol had fallen there was a probability that it would be reduced to a heap of ruins and afford no shelter to our troops; or supposing them to have been withdrawn altogether from the Crimea, they must still have required accommodation elsewhere. A Government which cannot attain to the conception that winter quarters will be needed for the troops until they hear that winter has overtaken them, has so much to learn, that we trust they will not be permitted to have our noble army for the *vile corpus* upon which to practise, even though it were certain that death and disaster would finally teach them common foresight and prudence.

Heavy accusations of neglect and incapacity have been made against the commander of the expedition. This excellent nobleman, who is placed in a situation of extreme embarrassment, and whose moral fortitude has been most severely tried, has not, like the ministers, had the opportunity—we cannot in their case say the advantage—of speaking in his own defence; and everybody knows how often apparently unanswerable charges are triumphantly refuted when the other side of the question comes to be heard. But it is palpable upon the face of the statements we possess, that most of the evils complained of are to be ascribed to the Government, and were neither caused, nor could possibly be cured, by the officer in command. A writer who asserts that Lord Raglan is getting into disrepute with the troops for want of proper attention to their comforts, and who cannot therefore be considered a favourable witness, specifies the miseries from which they are suffering as follows:—‘Fever and rheumatism become general—just what one might expect from the fact of men being hard-worked, ill-fed, ill-clothed, and never dry. Hardly an officer, and not a man, has a dry bed to lie down upon. Many of the men have not been really dry for now close upon three weeks: added to this is another misfortune, in the shape of scarcity of fuel, which compels a great majority of the army to eat their rations of salt pork uncooked.’ ‘We have only one blanket,’ says another, ‘to wrap round us when we lie down; and our tents, owing to so much rain having fallen, are very damp. Many of our poor fellows have scarcely a bit of shoe to their feet, many others not a shirt to their backs, and the consequence is, that our men are dying quite fast.’ A third describes the Guards as tying haybands round their legs to keep their trousers together; and a fourth, after stating that the stoutest men are giving way, asks, ‘How can it be otherwise, living, or trying to live, almost naked in mud, and worked to death in spongy rags, hanging in tatters about them, and covered with Russian vermin?’ ‘That the soldiers were without clothes, shirts, or shoes, that their tents were leaky, and that they had only

only a blanket to cover them, was not, as has been asserted in some of the letters from the Crimea, the fault of Lord Raglan, but of the Ministers, who forgot to forward proper supplies till so late in the season; and it is hard, indeed, for the commander to have to bear the blame of a negligence which has added immensely to his difficulties, and made his position more anxious and critical. Far different was the condition of the army of our allies. 'We are neither in want,' writes an officer in the camp, 'of provisions, tents, fuel, nor clothing; and but for the rain, and the atrocious mud which it causes, we should be comfortable enough.' General Canrobert does not assume the credit of these results. He ascribes them 'to the wise foresight of the Emperor and his Government,' as the absence of every necessary in the English camp is due to the blindness and procrastination of our own.

A charge which seemed to touch Lord Raglan more nearly is to be traced back to the same source as all the rest of the grievances. The men were put upon half or quarter rations because—although there were plenty of provisions at Balaklava—the mud tracks, which are there in the place of roads, did not permit them to be brought to the camp. The French in the fine weather had made an excellent road to their own quarters. Why, it is asked, did not Lord Raglan do the same? Evidently because the ministers whose duty it was to furnish him with reinforcements had not sent him sufficient to guard his trenches; and, far from having soldiers to spare for road-making, he had not enough by many thousands to watch the enemy and man his lines. 'All the trifling detachments sent out here,' writes an officer, 'are but as a drop in the ocean. . . . The duty is so hard and harassing that the same men who come up from the trenches at daydawn in the morning, shivering and wet, have to return frequently to the same post in the evening.' Every account reiterates the story. The sheer fatigue, apart from every other privation, is almost beyond the powers of human endurance, and it is a certain proof that Lord Raglan had no force at his command for supplementary purposes, that when the road became a matter of life or death it had to be constructed by the French.

The condition of our horses, like that of our men, is wretched in comparison with the beasts of burden in the camp of our allies. Over-worked and under-fed, exhausted by hunger and toil, they drop down by scores and die in the mud. How much of this proceeds from the scanty forage transmitted from home does not appear; but an English officer attached to the Turkish army shows that there is another reason for the contrast. 'The English horse, accustomed to warm stables, good food, and groom-

ing, cannot stand the rigour of this climate, exposed as he is in the open air to rain, cold, and snow, often up to his knees in mud, and not half fed. The French cavalry stand it better than ours, a great many having African horses, which never stood in a stable, and can bear the cold better.' That something even here is due to the better management of the French may reasonably be presumed. They far excel us in cleverness of contrivance and completeness of organisation; and it is one of the many advantages of the alliance that we shall learn very valuable lessons from the contact. But a general is not to be condemned if in the midst of a harassing siege he has failed to infuse the national peculiarities of the French into the English soldier, especially as the larger part of the superior arrangements of our allies depends upon stores and training, which no commander can supply at will.'

It is one of the characteristic differences of the nations that a French commander shows himself more among the men than is usual with English generals. The Duke of Wellington was never in the habit of mingling with the troops for the purpose of conversing with them. He seldom appeared in the ranks unless to reconnoitre or command; and if Lord Raglan, during the suspension of active operations, has seldom ridden along the lines, he is only conforming to the example of his great master in the art of war. How far the contrary practice is desirable we cannot undertake to pronounce; but of this we are confident, that as the omission is not a personal peculiarity of Lord Raglan, so neither does it proceed from heartlessness or sloth.

When Lord Raglan was appointed to the command of the expedition not a single whisper was heard against the choice. No Marlborough or Wellington was set aside in his favour, nor has any risen up to take his place if he was removed. He was selected on public grounds, because he was believed to be the fittest man for the post. He was the friend and companion of the Duke in his glorious campaigns of the Peninsula and Waterloo; he not only witnessed his proceedings, but he had the inestimable advantage, both then and ever after, of listening to his views and instructions; he was possessed of all the old traditions, and, from his official position, his knowledge had never been permitted to slumber. There was no other person who possessed equal advantages, or gave equal promise. His courage and calmness have even surpassed what was anticipated from his former chivalrous career, and though errors may have been committed, as inevitably they must, nothing has yet occurred to convince us that he has deserved to forfeit the confidence of his countrymen. It is the Government that are to be blamed for the sad condition of our army; and whatever sympathy Lord Raglan may

may have felt for the misery they have endured, it has been out of his power to alleviate it.

The enormous extra cost at which purchases and contracts on a gigantic scale are made on a sudden is a minor, but nevertheless no insignificant evil, and is not to be forgotten in the estimate of Ministerial mismanagement :—

‘I saw,’ says Mr. Layard, ‘a letter a few days ago from a merchant at Liverpool, who, being himself a gainer by the prodigality of the Government, would not have written as he did were not the facts of the case as gross as he stated them to be. After describing the manner in which, at the last moment, transports had been taken up by the agents of Government in the most reckless manner, and contracts for horse-boxes entered into without any stipulations whatever, he ends by saying that this lavish expenditure of the public money had almost turned his hair grey. I need scarcely remind the House of the fate of those horse-boxes. The first time the vessels in which they were fitted up were exposed to a slight sea, they all gave way, and above two hundred of our cavalry horses were thrown overboard, at a time when cavalry was of the utmost importance to our operations in the Crimea. Scarcely a day passes that I do not receive from some quarter or another letters from persons who bring to my notice, because I have taken a part in this question in the House, similar instances of wanton extravagance and culpable neglect. Up to the present moment the Government have endeavoured to carry on this war upon principles of economy utterly inconsistent with its objects and the magnitude of the undertaking. Now they find that the nation is indignant at the shameful instances of mismanagement and negligence which have occurred, they are rushing into the wildest extravagance. Any proposal, however ridiculous, any invention, however absurd, is taken up.’

To do too much at one time and too little at another—to squander twice the sum in haste that would have sufficed if it had been expended with prudence—to procure what is useless and overlook what is needful—to be served with articles, like the horse-boxes, of which the quality is in the inverse ratio to the cost, and which entailed the ultimate destruction of both horse-boxes and horses—to lose half the benefit of the purchases by postponing them till much of the evil has accrued which they were designed to prevent—such are the inevitable consequences of a system in which nothing is foreseen, and the negligence of months has to be repaired in a week. A statement made by Mr. S. Herbert in his speech, as an evidence of the consideration he had shown for the soldiers, is a singular proof of the extravagance which is put in the place of knowledge and exertion :—

‘The Government have been charged with being ignorant of the severity of the climate of the Crimea, and with not adopting those measures which are best calculated to protect the troops from its injurious influence. Now what is the position in which we have been placed?’

I have

I have a letter from a gentleman, a member of this House, but whom I do not now see in his place, but a gentleman whose opinion is always worth having, who says, "*Experto crede*, I know the climate of the Crimea well; don't believe the accounts that are published about the temperature; but whatever you do, follow the custom of the country; they must know best, and they clothe themselves in skins and not in woollen." I then requested the opinion of a person of great experience in Arctic researches, and he came to me and said, "Don't dress the men in skins, stick to wool, that is the only thing to keep them warm." (Laughter.) I ask the House how was I to decide between these two authorities? Without attempting to do so, I thought the safest thing was to take the advice of both, and to send out both skins and woollen (cheers); and my hope is, that before long every man in the army will have a change both of woollen and of skins from top to toe.'

The House, it will be seen, cheered what sounded at the moment a generous sentiment. But is it fitting for a Secretary-at-War, intrusted with the expenditure of public money levied upon thousands who pinch themselves to pay it, thus to send out clothing for an entire army, one-half of which, according to his own representation, might not improbably prove unsuitable, merely because a couple of gentlemen differ as to which material is best? This is an easy method of conducting a war—it saves inquiry and does away with the necessity for a decision; but though those who adopt it may sometimes be right by chance, the general effect must be a frightful waste of the money of the nation, and a constant inappropriateness in the nature of the supply.

It is doubtful whether the Government are not at this moment sacrificing economy, security, and convenience, by their neglect to establish magazines upon the shores of the Euxine. 'Sinope,' we quote again from Mr. Layard, than whom, on this matter, there can be no higher authority, 'had been pointed out as a port in the Black Sea nearer than any other to the Crimea, communicating with the fertile provinces and large cities of Asia Minor, from which not only cheaper and abundant provisions but supplies of all kinds might be obtained. But these warnings and recommendations were made in vain.' There wood might have been procured in endless abundance, the cost of the huts would have been comparatively trifling, and many a soldier would still be living who has perished in the mire on the heights before Sebastopol. 'Beyond Sinope,' writes Mr. Curzon in his work on Armenia, 'where the flat alluvial land stretches down to the sea-shore, there are forests of such timber as we have no idea of in these northern regions. Here there are miles of trees so high, and large, and straight, that they look like minarets in flower.'

If we turn from the incompetency which Ministers have hitherto displayed, to glance at the existing requirements, there is

is nothing to re-assure us. We are coping with a foe whose resources are immense, and who is lavish of them to wastefulness. While materials remain, his reparations will be equal to the magnitude of the ruins we may cause. His hollow negotiations and pretended concessions are only stratagems of war; and if we refuse to come to terms until we can make a secure peace, the question is nothing less than whether the Czar will be exhausted sooner than England and France. At every pause in our proceedings he is accumulating odds against us, and we run a risk of succumbing because we have opposed the little finger of England to the right arm of Russia. The amount of our armaments should have no other limit than our means and the demands of the crisis. Soldiers, arms, ammunition, reserves—all must be furnished on the largest scale that, upon a liberal calculation, can probably be required. That there may not sometimes be deficiency there must often be excess. Economy, as we have already intimated, is one of the main duties of a long and costly contest, and never should the expenditure of a government be scrutinised with more jealous eyes. But it must be economy in the right place—economy in its modes of management, in its bargains, in its direction of expenditure to useful ends—not economy of men and of stores, which means loss of life, disasters, perhaps defeat and disgrace. If soldiers and all the *matériel* of war could be had at an instant's notice, by sending down an order into the manufacturing districts, Ministers would doubtless be equal to the crisis. Everything, on the contrary, depends on steady foresight and sustained exertion; and the greater portion of what the occasion demands still remains to be done. Sebastopol has not yet fallen; and notwithstanding the risks which were incurred by neglecting to accumulate the means of transport before the commencement of the campaign, yet will it be believed that down to the present moment and ten months since the war began, the army is not even now in a condition to move ten miles from their present position? Before Russia can be forced into a peace we must be enabled to follow her troops, to push forward inland, and make her feel that she must yield, or lose the fairest part of her dominions. Next year the shores of the Baltic also must be the scene of a contest as arduous as that which is going on on the shores of the Euxine, if only to prevent the concentration of the forces of the Czar against the allies in the South. Nor have we only to attack—we must defend. It is maintained by Mr. Layard that the Turkish army in Armenia will melt away unless strongly reinforced; and that there is nothing to prevent the enemy next spring from overrunning the whole of Western Asia. Thus while we are struggling to make good our footing on the Russian soil, the Czar

may

may richly indemnify himself by seizing upon this wide expanse of fertile territory. It is not for us to attempt to sketch out a plan for the campaign. It is one of the reasons which make a wise and provident Ministry more than ordinarily necessary that they alone are in a position to estimate thoroughly the situation of affairs. They have means of information at their command, which we fear have been neglected, but which should have enabled them to take a more extended view than any private individual, however able and experienced. Their decisions and schemes must often be secret; and whether they are doing much or little, are proceeding wisely or foolishly, can only in general be known by the event. No substitute can, therefore, be found for their incapacity in the wisdom and vigilance of Parliament; and looking at the vastness and difficulty of the undertaking, and the utter inaptitude which the Government has hitherto displayed, it is impossible to have any belief in their ability to conduct the war.

We have spoken throughout of the Government as a whole, and as a whole they are responsible. But practically the largest part of the arrangements must depend upon the Minister of War. To think for him, and to control him on all essential points, is in fact to depose him; and though an energetic Premier might be expected in such a crisis to exercise a constant and active supervision, the other members of the Ministry can do little more than assist in framing the general policy for the year. The Duke of Newcastle, who holds the office which at the present moment is the most important in the administration, has not the faculties for the task, and to this sole circumstance must be attributed many of the mistakes which have been committed. The talents which are required to carry on a war are of so exceptional a kind that it is no disparagement to a peer, the whole of whose experience has been derived from the functions of peace, that he should not be equal to the emergency. He becomes blameable only when in an hour of peril he clings to a post for which he is universally pronounced to be unfitted. His appointment when he was nominated gave general dissatisfaction. All parties were agreed that Lord Palmerston was the member of the Government whose previous career afforded the best hope that he would prove an active and intelligent Minister of War. Lord Aberdeen was not bound by this strongly-expressed opinion of the public; but when he acted in defiance of it, nothing could justify him except the signal success of the man of his choice. Personal courtesies are crimes when they are paid for by the lives of hundreds of our soldiers; and not an hour ought to be lost in cancelling an arrangement which has turned out so unfortunate. Lord Ellenborough spoke of the great mischief which
was

was occasioned by having so many persons in the Cabinet of nearly equal ability, without one statesman of pre-eminent capacity to keep them in order. Unless there is either subordination or unanimity of opinion the public business must be impeded; but it is at least an equal evil that the most important offices are not held by those who are most competent to fill them. The indignation which broke out after Inkerman has subsided into murmurs, but distrust and dissatisfaction are widely spread; and though the public, in spite of unavoidable errors, will support a Government which does its duty, it will take little more to raise a tempest of anger against men who jeopardise everything out of delicacy to one colleague or jealousy of another.

A re-distribution of two or three offices might be attended with beneficial effects; but it demands no exorbitant patriotism to go further still, and form a War-Government irrespective of party. The distinctions of Whig and Conservative are suspended for the time. No great measure of civil polity could now be entertained until the national struggle in which we are engaged takes a decisive turn. The experiment was tried by Lord John Russell, and neither the Parliament nor the country would listen to his proposal. While all domestic questions which can raise party differences are thus in abeyance, men with a spark of love for their country can surely act together for the common good. In truth, a War Ministry would have the advantage of a unanimity upon the business of the hour, which we venture to assert has never been enjoyed by the present Cabinet. Nobody supposes that the sentiments of Lord Palmerston and Lord John Russell, for instance, can have been in unison with those of Lord Aberdeen, although they may have managed to keep up a semblance of agreement, and no little mischief has already arisen from the attempt to combine these jarring elements of hot and cold. In the actual state of things the country loses the services of the statesman who has the greatest knowledge of military affairs, and who is not surpassed in energy, courage, and independence by any man alive. It is no rash prediction to hazard that, with Lord Ellenborough for Minister of War, the whole of our proceedings would wear a new aspect before six months had expired. Not the least advantage of the appointment would be the pledge it would afford the country that the first draught of troops under the provisions of the 'Foreign Enlistment Bill' would be the last. No end could be answered by discussing here a question upon which argument has been exhausted. It is enough that the step was opposed to the feelings, in part it may be allowed to the prejudices, of the class from which recruits are obtained, that it checked their enthusiasm, and threatened to deprive us of English in the same degree that it furnished us

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with German troops. Labour at home is abundant. It is not for subsistence but from a military disposition that our men are attracted to the ranks; and whatever has a tendency to quench the spirit, which is the strength of the nation, is fraught with peril.

It is not the immediate physical effects which are alone involved in such mismanagement of the war as we have hitherto witnessed. The feelings of the people will be abated in some quarters, and die away or become hostile in others. There are certain states of mind which have been epidemic with our public whenever a contest has been waged in modern times. The notion that our soldiers and sailors had degenerated is, for example, a perennial illusion. It arose at the commencement of the conflict consequent upon the French Revolution, and Burke then reminded the world that Dr. Browne, at the beginning of the Seven Years' War, had endeavoured, with the applause and assent of his countrymen, to demonstrate, in a philosophical discourse, that the distinguishing features of the people of England had been totally changed, and that frivolity and feebleness had become the national characteristic. Never, Burke remarks, did our masculine spirit display itself with greater energy than at the time when the kingdom was subscribing to speculative arguments to prove us ignobly effeminate. We have again witnessed the same misgivings in a minor degree till Alma and Inkerman dispelled the calumny. In contradiction to this notion, and yet in company with it, there has always prevailed at the opening of our wars a contempt for our antagonists—a belief that British bravery could contend against any odds, and that the enemy would be driven before us like chaff before the wind. This, too, we have witnessed. The unexpected success of the Turks on the Danube, the victory of the Alma, the false report of the taking of Sebastopol, all confirmed the disposition to underrate the comparative prowess of our foe. Invariably this over-confidence at the outset has been followed by undue apprehension at the first obstacle or reverse, and a few weeks ago there existed in the country a wide-spread alarm which almost amounted to pusillanimity. With such a repetition of former precedents, it is not very likely that one other will fail which has never been wanting—weariness of a contest which promises to be protracted, and a desire to end it upon any terms which are not absolutely disgraceful. It was well observed by Lord Ellenborough that the present was pre-eminently 'a statesman's war—a war far-seeing in its object, and that, though popular at first, unless there was a constant succession of successes to captivate the people, it would be extremely difficult to maintain throughout the steady support of the public.' If the war is sluggish and inglorious, as well as costly in money and blood, it will not be long before

before many will ask, with Mr. Cobden, whether the end is worth the sacrifice. The ranks of his followers—now few in number—will be swelled by fresh recruits, who will assert with him that we have already accomplished the object for which we took up arms, and a party will be formed which will clamour for a premature and ephemeral peace. Nor will the Government be indisposed to listen to the demand; for, harassed and perplexed by the embarrassments they have brought upon themselves, they will be glad of an excuse to escape from their difficulties. Even now the language used by Lord John Russell, in reply to Mr. Cobden, excites a misgiving as to the policy and firmness of the Government.

The energies of Russia have for generations been mainly directed to the development of her military strength, to securing old conquests and preparing for new. By violence, by threats, by falsehood, by bribes, by intrigues, she has incessantly extended the boundaries of her empire. The normal state of the Muscovite is war, and the secret of his success is, that he has always been able and willing to fight, while those who alone had the strength to resist him were anxious for repose. They remonstrated, but they submitted; right and reason were on one side, the victory on the other. Yet, as Russia had never laid aside for a single day her schemes of spoliation—as her occasional moderation at particular periods was only assumed to mask her ultimate designs—it was evident that the danger would become, at last, too great to be tolerated, and a stop must be put to concession. The Secret Despatches showed that the Czar imagined that the hour had arrived when he could grasp Constantinople; and the revelations contained in these papers, with other occurrences all tending to the same end, convinced the immense majority of Englishmen that we ought no longer to delay to beat back the aggressor before he could clutch his prey. But it was not merely the last injustice that we were called upon to redress. What we want is security for the future—to put a curb upon the insatiable rapacity of this invading nation, which will otherwise return to her old attitude and renew her former career. It is only at the end of a series of wrongful aggressions that we have taken up arms, and it would now be folly to lay them down again until we have come to a satisfactory settlement of the whole account. When, therefore, Lord John Russell declares that the Government do not desire to deprive Russia of any of her territories, we think that views so contracted indicate more eagerness to escape from the difficulties of war than ambition to extort a durable peace. There is no desire among the people of this country to reduce her from a first to a second-rate power; but if she is to be left with all her present possessions,
what

what protection do we obtain against future encroachments? 'Russia,' said Lord Lyndhurst, in the wise and masterly speech he delivered last June in the House of Lords, 'carrying diplomacy to the extremest point of refinement, has introduced a new and significant term into that mysterious science, namely, the term *material guarantee*. If the Emperor will give a guarantee of this description, something solid and substantial, as a pledge of his fidelity—something that he would be unwilling to forfeit—such a guarantee might enable us to hope for a lasting peace; but to rely upon a mere paper guarantee—a mere pledge of his Imperial word—would, your Lordships must feel, be the extreme of folly and weakness.' Even though Sebastopol, as will probably happen, should be levelled to the ground, and every vessel within its harbour be destroyed, is it possible to doubt, if we are not to alienate one inch of ground, that the prediction of Mr. Cobden will be verified, that in ten years it will be rebuilt more strongly than before with money borrowed from the people of England? Or if it is to be a condition that Russia is to have no fortress in the Black Sea, the article would be violated on the first dissension between the other powers of Europe. 'You do not destroy or touch Russian power,' Mr. Cobden justly said, though for a different purpose from that for which we quote him, 'unless you can *permanently* occupy some portion of its territory, disorder its industry, or disturb its government. If you can strike at its capital, if you can take away some of its immense fertile plains, or take possession of those vast rivers which empty themselves into the Black Sea, then indeed you strike at Russian power.' This is so obvious that we cannot believe that the expressions of Lord John Russell are to be literally understood; but if indeed both he and his colleagues have dwarfed their schemes to bring them down to the dimensions of their management—if they are as hasty to conclude an abortive peace as they were slow to begin an inadequate war—then the interests of England are no longer safe in their keeping, and, whatever may be the difficulties attending at present an entire change of ministry, they can and ought to yield to the paramount necessity of a foreign policy in harmony with the expectations and present spirit of the nation.

The most moderate conditions that will afford a fair prospect of protection from the future encroachments of Russia are all that we ought at this moment to demand, but if we are compelled by the continued obstinacy of the Czar to protract the war, a new state of things will probably commence which must end in depriving him of provinces which by timely concession he has it in his power to retain. No pains should be spared to unite Europe in a general league against the common enemy, and
none

none of the parties to the contract can then be expected to withdraw from the contest until one and all have obtained satisfaction for the wrongs they have suffered or have reason to apprehend.

One happy circumstance at least has grown out of the collision—

‘ the mutual league,
United thoughts and councils, equal hope
And hazard in the glorious enterprise,’

which binds together France and ourselves. The feeling upon which the alliance is founded has been gradually increasing for some years past, and would have been earlier apparent except for the suspicion of each that the old enmity was still entertained by the other. Any prejudices which may have lingered here have already passed away, and the entire nation desire nothing more ardently than the perpetuity of a union which will confer more lustre upon the reign of Louis Napoleon than if he had been the hero of a hundred fights. No two countries can do each other equal harm or equal good, and while the rivalry which struggled for supremacy was a source of weakness to both, the greatness of both will be vastly increased by mutual aid.

No doubt can now be entertained that Austria is to be classed in the number of our allies. If she has been slow to act, it has arisen from the enormous difficulties of her position. In peril of rebellion, and with her finances disordered, her frontiers were exposed in addition to the attack of the Czar, who, if she had braved him before her army was fully trained and equipped, would have seized upon Vienna. We who are safe from the inroads of the enemy, may commit the imprudence of making war upon a peace establishment with a certain amount of impunity; but had Austria been as rash in her movements as England, she would have had to endure incalculable evils herself, and could have rendered no assistance to the common cause. It is as much for our interests as her own that she has waited until she was able to strike with effect before she provoked the blow that might have crushed her, and deprived us of her aid. That Prussia must follow in the wake of Austria can hardly be questioned. Isolation, if it were possible, would reduce her to insignificance, and she must either enter into the league against Russia or lose her place among the powers of Europe.

The dangerous vicinity of Sweden to Russia is at once the motive and the obstacle to her joining the alliance. The Muscovite has always preyed upon his weaker neighbours, and there would be no surer method of imparting strength and adhesion to all the states which surround him than for the greater powers to give the lesser a guarantee. If Russia cannot do an

injustice to one without obliging all to resent it, the feeblest member of the alliance has the strength of the whole ; and, unless some European convulsion broke forth, an effectual barrier would be raised against future encroachments. This is the method to obtain a speedy peace, and to preserve it when it is obtained. Russia, encompassed upon every side, must yield to the pressure, and will thenceforth be unable to break the bounds prescribed to her by Europe. But success in negotiations as in war must depend upon those who conduct them ; and, since men of all parties have supported the Government because this is a national and not a party question, it is not for ministers alone to show themselves wanting in patriotism by permitting their own political and personal predilections to stand in the way of the public weal.

Just as these sheets were being printed off, we received the intelligence that Russia had accepted the Four Points. If our article had been written with a knowledge of this circumstance, we should have endeavoured to enforce the same views we have already expressed, and should not the less have urged the propriety of some change in the Cabinet. We believe, indeed, that there will be greater need than ever for vigilance and firmness. We dread the diplomacy of Russia more than her arms. We are apprehensive that her submission is a device for detaching Austria from the alliance, and for paralysing our preparations for the next campaign. Hostilities, it is affirmed, are not to be interrupted ; but we are alarmed lest the Government should repeat their former errors, and, lulled into false security by the negotiations, should relax in their efforts to provide armaments against the spring. Any such suspension in our efforts would be the height of folly and false economy. The mere pecuniary cost of preparing for war is vastly less than that of war itself, and should Russia really yield to our demands, it will only be because we hold ourselves in readiness to exact what she refuses. In ignorance of the guarantees that will be asked of her, and the amount of the indemnity which will be required for the expenditure we have incurred, we can give no opinion upon the conditions of peace proposed by our Ministers. We trusted them to provide for the contingencies of war, and found ourselves deceived. If, taking advantage of the secrecy with which the negotiations must be conducted, they should again disappoint the reasonable expectations of the public and assent to inadequate terms, they will not, we venture to predict, be able to withstand the storm of reprobation which is justly due to men who, through weakness and incapacity, have betrayed their country.

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On the 23rd the allied armies commenced their onward march. Disease had unfortunately again shown itself in the British ranks. The cholera had broken out afresh, much aggravated, it is believed, by the 4th division having been allowed to bivouack upon the ground which Russian troops had just left, and which was covered with decayed and offensive matter, besides teeming with loathsome vermin. There is no officer more needed in our army than one, either a military or a medical man, whose special business it should be to see to the sanitary condition of the camp. Owing to the want of the commonest precautions, and of some one person to look to such matters, offal, dead horses, and every kind of noisome matter are permitted to accumulate close to our tents. The air becomes tainted, and disease soon spreads through the camp.

Lord Raglan desired to march in one day to the Belbec; but Marshal St. Arnaud now objected. The armies, therefore, halted on the Katsha, and on the following day (the 24th) encamped on the left bank of the Belbec.

The original intention of the commanders of the allied armies had been to invest and attack the forts which protect Sebastopol on the north. The town, with its arsenal, its dockyards, and its storehouses, stands on the southern side of a deep inlet, whilst on the opposite side are only the large stone forts and batteries which defend the entrance and interior of the harbour. These massive edifices are erected upon the water's

contracted in an African campaign. They chiefly consist of men who, having served their prescribed five years in the army, have no desire to leave it, but prefer the perils and excitement of a military life, and of various other adventurous spirits who love war better than peace. It requires the strictest discipline to keep them under control, and to place some check upon their natural propensities. They wear a loose Oriental dress, with fez and turban, both becoming and convenient.

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ERRATA IN No. CXC.

The last sentence of the first paragraph at p. 362 should have been applied to the house of Mr. Holford in Regent's Park instead of to that of Mr. Holford in Park Lane.

Page 470, line 11, for *he* read *Mr. Newman*.

END OF THE NINETY-FIFTH VOLUME.

